HUMAN IV DNA (CD:225-8

GAATAGCCCCCTTTCACTTCTGAGTCCCTGCATGTGCGGGGCTGAAGAAGGAAGCCAGAAGCCTCCTAGCCTCGCCTCCA
CGTTTGCTGAATACCAAGCTGCAGGCGAGCTGCCGGGCGCTTTTCTCTCCTCCAATTCAGAGTAGACAAACCACGGGGAT
TTCTTTCCAGGGTAGGGGAGGGGCCGGGCCCGGGGTCCCAACTCGCACTCAAGTCTTCGCTGCCATGGGGCCGTCATGG
GCACCTTCTCATCTCTGCAAACCAAACAAAGGCGACCCTCGAAAGATAAGATTGAAGATGAGCTGGAGATGACCATGGTT
TGCCATCGGCCCGAGGGACTGGAGCAGCTCGAGGCCCAGACCAACTTCACCAAGAGGGAGCTGCAGGTCCTTTATCGAGG
CTTCAAAAATGAGTGCCCCAGTGGTGTGGTCAACGAAGACACATTCAAGCAGATCTATGCTCAGTTTTTCCCTCATGGAG
ATGCCAGCACGTATGCCCATTACCTCTTCAATGCCTTCGACAGCACTCAGACAGGCTCCGTGAAGTTCGAGGACTTTGTA
ACCGCTCTGTCGATTTTATTGAGAGGAACTGTCCACGAGAAACTAAGGTGGACATTTAATTTGTATGACATCAACAAGGA
CGGATACATAAACAAAGAGGAGATGATGGACATTGTCAAAGCCATCTATGACATGATGGGGAAATACACATATCCTGTGC
TCAAAGAGGACACTCCAAGGCAGCATGTGGACGTCTTCTTCCAGAAAATGGACAAAAATAAAGATGGCATCGTAACTTTA
GATGAATTTCTTGAATCATGTCAGGAGGACGACAACATCATGAGGTCTCTCCAGCTGTTTCAAAATGTCATGTAACTGGT
GACACTCAGCCATTCAGCTCTCAGAGACATTGTACTAAACAACCACCTTAACACCCTGATCTGCCCTTGTTCTGATTTTA
CACACCAACTCTTGGGACAGAAACACCTTTTACACTTTGGAAGAATTCTCTGCTGAAGACTTTCTTATGGAACCCAGCAT
CATGTGGCTCAGTCTCTGATTGCCAACTCTTCCTCTTTCTTCTTCTTGAGAGAGACAAGATGAAATTTGAGTTTGTTTTG
GAAGCATGCTCATCTCCTCACACTGCTGCCCTATGGAAGGTCCCTCTGCTTAAGCTTAAACAGTAGTGCACAAAATATGC
TGCTTACGTGCCCCCAGCCCACTGCCTCCAAGTCAGGCAGACCTTGGTGAATCTGGAAGCAAGAGGACCTGAGCCAGATG
CACACCATCTCTGATGGCCTCCCAAACCAATGTGCCTGTTTCTCTTCCTTTGGTGGGAAGAATGAGAGTTATCCAGAACA
ATTAGGATCTGTCATGACCAGATTGGGAGAGCCAGCACCTAACATATGTGGGATAGGACTGAATTATTAAGCATGACATT
GTCTGATGACCCAAACTGCCCCG

HUMAN IV PROTEIN

MGAVMGTFSSLQTKQRRPSKDKIEDELEMTMVCHRPEGLEQLEAQTNFTKRELQVLYRGFKNECPSGVVNEDTFKQIYAQ

FFPHGDASTYAHYLFNAFDTTQTGSVKFEDFVTALSILLRGTVHEKLRWTFNLYDINKDGYINKEEMMDIVKAIYDMMGK

YTYPVLKEDTPRQHVDVFFQKMDKNKDGIVTLDEFLESCQEDDNIMRSLQLFQNVM

FIGURE 1

RAT lvN (rlvN) DNA (CD: 339-1037)

GGCACACAACCCCTGGATTCTTCGGAGAATATGCCGTGAGGTGTTGCCAATTATTAGTTCTCTTGGCTAGCAGATGTTTA

GGGACTGGTtaaGCCTTTGGAGAAATTACCTTAGGAAAACGGGGAAATAAAAGCAAAGATTACCATGAATTGCAAGATTA

CCTAGCAATTGCAAGGtagGAGGAGAGAGGTGGAGGGCGGAGTAGACAGGAGGGAGGGAGAAAGtgaGAGGAAGCTAGGC

TGGTGGAAATAACCCTGCACTTGGAACAGCGGCAAAGAAGCGCGATTTTCCAGCTTtaaATGCCTGCCCGCGTTCTGCTT

GCCTACCCGGGAACGGAGATGTTGACCCAGGGCGAGTCTGAAGGGCTCCAGACCTTGGGGATAGTAGTGGTCCTGTGTTC

CTCTCTGAAACTACTGCACTACCTCGGGCTGATTGACTTGTCGGATGACAAGATCGAGGATGATCTGGAGATGACCATGG

TTTGCCATCGGCCTGAGGGACTGGAGCAGCTTGAGGCACAGACGAACTTCACCAAGAGAGAACTGCAAGTCCTTTACCGG

GGATTCAAAAACGAGTGCCCCAGTGGTGTGGTTAACGAAGAGACATTCAAGCAGATCTACGCTCAGTTTTTCCCTCATGG

AGATGCCAGCACATACGCACATTACCTCTTCAATGCCTTCGACACCACCCAGACAGGCTCTGTAAAGTTCGAGGACTTTG

TGACTGCTCTGTCGATTTTACTGAGAGGAACGGTCCATGAAAAACTGAGGTGGACGTTTAATTTGTACGACATCAATAAA

GACGGCTACATAAACAAAGAGGAGATGATGGACATAGTGAAAGCCATCTATGACATGATGGGGAAATACACCTATCCTGT

GCTCAAAGAGGACACTCCCAGGCAGCACGTGGACGTCTTCTTCCAGAAAATGGATAAAAATAAAGATGGCATTGTAACGT

TAGACGAATTTCTCGAGTCCTGTCAGGAGGATGACAACATCATGAGGTCTCTACAGCTGTTCCAAAATGTCATGTAACTG

AGGACACTGGCCATCCTGCTCTCAGAGACACTGACAAACACCTCAATGCCCTGATCTGCCCTTGTTCCAGTTTTACACAT

CAACTCTCGGGACAGAAATACCTTTTACACTTTGGAAGAATTCTCTGCTGAAGACTTTCTACAAAACCTGGCACCGAGTG

GCTCAGTCTCTGATTGCCAACTCTTCCTCCCTCCTCCTCTTGAGAGGGACGAGCTGAAATCCGAAGTTTGTTTTGGAAGC

ATGCCCATCTCTCCATGCTGCTGCTGCCCTGTGGAAGGCCCCTCTGCTTGAGCTTAAACAGTAGTGCACAGTTTTCTGCG

TATACAGATCCCCAACTCACTGCCTCTAAGTCAGGCAGACCCTGATCAATCTGAACCAAATGTGCACCATCCTCCGATGG

CCTCCCAAGCCAATGTGCCTGCTTCTCTTCCTCTGGTGGGAAGAAAGAACGCTCTACAGAGCACTTAGAGCTTACCATGA

AAATACTGGGAGAGGCAGCACCTAACACATGTAGAATAGGACTGAATTATTAAGCATGGTGGTATCAGATGATGCAAACA

GCCCATGTCATTTTTTTTTCCAGAGGTAGGGACTAATAATTCTCCCACACTAGCACCTACGATCATAGAACAAGTCTTTT

AACACATCCAGGAGGGAAACCGCTGCCCAGTGGTCTATCCCTTCTCTCCATCCCCTGCTCAAGCCCAGCACTGCATGTCT

CTCCCGGAAGGTCCAGAATGCCTGTGAAATGCTGTAACTTTTATACCCTGTTATAATCAATAAACAGAACTATTTCGTAC

AAAAAAAAAAAAAAA

FIGURE 2

RAT 1vN (r1vN) PROTEIN

MLTQGESEGLQTLGIVVVLCSSLKLLHYLGLIDLSDDKIEDDLEMTMVCHRPEGLEQLEAQTNFTKRELQVLYRGFKNEC

PSGVVNEETFKQIYAQFFPHGDASTYAHYLFNAFDTTQTGSVKFEDFVTALSILLRGTVHEKLRWTFNLYDINKDGYINK

EEMMDIVKAIYDMMGKYTYPVLKEDTPRQHVDVFFQKMDKNKDGIVTLDEFLESCQEDDNIMRSLQLFQNVM.

FIGURE 2 (cont'd)

MOUSE 1V (CD: 477-1127)

CGGCCCCCTGAGATCCAGCCCGAGCGCGGGGCGGAGCGGCCGGGTGGCAGCAGGGGCGGGCGGGCGGAGCGCAGCTCCCG

CACCGCACGCGGCGCGGGCTCGGCAGCCTCGGCCGTGCGGGCACGCCGGCCCCGTGTCCAACATCAGGCAGGCTTTGGGG

CTCGGGGCTCGGGCCTCGGAGAAGCCAGTGGCCCGGCTGGGTGCCCGCACCGGGGGGCGCCTGTCAGGCTCCCGCGAGC

CTCTGGCCCTGGGAGTCAGTGCATGTGCCTGGCTGAAGAAGGCAGCAGCCACGAGCTCCAGGCGCCCCGGCCCCACGTTT

TCTGAATACCAAGCTGCAGGCGAGCTGCTCGGGGCTTTTTTGCTTTCTCGCTTTTCCTCTCCTCCAATTCAAAGTGGGCA

ATCCACACCGATTTCTTTTCAGGGGAGGGAAGAGACAGGGCCTGGGGTCCCAAGACGCACACAAGTCTTCGCTGCCATGG

GGGCCGTCATGGGCACTTTCTCCTCCCTGCAGACCAAACAAAGGCGACCCTCTAAAGACAAGATTGAGGATGAGCTAGAG

ATGACCATGGTTTGCCACCGGCCTGAGGGACTGGAGCAGCTTGAGGCACAGACGAACTTCACCAAGAGAGAACTGCAAGT

CTTGTACCGGGGATTCAAAAACGAGTGCCCTAGCGGTGTGGTCAATGAAGAAACATTCAAGCAGATCTACGCTCAGTTTT

TCCCTCACGGAGATGCCAGCACATATGCACATTACCTCTTCAATGCCTTCGACACCACCCAGACAGGCTCTGTAAAGTTC

GAGGACTTTGTGACTGCTCTGTCGATTTTACTGAGAGGGACAGTCCATGAAAAACTAAGGTGGACGTTTAATTTGTATGA

CATCAATAAAGACGGCTACATAAACAAAGAGGAGATGATGGACATAGTCAAAGCCATCTATGACATGATGGGGAAATACA

CCTATCCTGTGCTCAAAGAGGACACTCCCAGGCAGCATGTGGATGTCTTCTTCCAGAAAATGGATAAAAATAAAGATGGC

ATTGTAACGTTAGATGAATTTCTTGAATCATGTCAGGAGGATGACAACATCATGAGATCTCTACAGCTGTTCCAAAATGT

CATGTAACTGAGGACACTGGCCATTCTGCTCTCAGAGACACTGACAAACACCTTAATGCCCTGATCTGCCCTTGTTCCAA

TTTTACACACCAACTCTTGGGACAGAAATACCTTTTACACTTTGGAAGAATTCTCTGCTGAAGACTTTCTACAAAACCTG

GCACCACGTGGCTCTGTCTCTGAGGGACGAGCGGAGATCCGACTTTGTTTTGGAAGCATGCCCATCTCTTCATGCTGCTG

CCCTGTGGAAGGCCCCTCTGCTTGAGCTTAATCAATAGTGCACAGTTTTATGCTTACACATATCCCCAACTCACTGCCTC

CAAGTCAGGCAGACTCTGATGAATCTGAGCCAAATGTGCACCATCCTCCGATGGCCTCCCAAGCCAATGTGCCTGCTTCT

CTTCCTCTGGTGGGAAGAAAGAGTGTTCTACGGAACAATTAGAGCTTACCATGAAAATATTGGGAGAGGCAGCACCTAAC

ACATGTAGAATAGGACTGAATTATTAAGCATGGTGATATCAGATGATGCAAATTGCCCATGTCATTTTTTTCAAAGGTAG

GGACAAATGATTCTCCCACACTAGCACCTGTGGTCATAGAGCAAGTCTCTTAACATGCCCAGAAGGGGAACCACTGTCCA

GTGGTCTATCCCTCCTCTCCATCCCCTGCTCAAACCCAGCACTGCATGTCCCTCCAAGAAGGTCCAGAATGCCTGCGAAA

CGCTGTACTTTTATACCCTGTTCTAATCAATAAACAGAACTATTTCGTAAAAAAAAAAAAAAAAAA

MOUSE 1V PROTEIN

MGAVMGTFSSLQTKQRRPSKDKIEDELEMTMVCHRPEGLEQLEAQTNFTKRELQVLYRGFKNECPSGVVNEETFKQIYAQ

FFPHGDASTYAHYLFNAFDTTQTGSVKFEDFVTALSILLRGTVHEKLRWTFNLYDINKDGYINKEEMMDIVKAIYDMMGK

YTYPVLKEDTPRQHVDVFFQKMDKNKDGIVTLDEFLESCQEDDNIMRSLQLFQNVM

FIGURE 3

RAT IVL DNA (CD: 31-714)

GTCCCAAGTCGCACACAAGTCTTCGCTGCCATGGGGGCCGTCATGGGTACCTTCTCGTCCCTGCAGACCAAACAAAGGCG

ACCCTCTAAAGACATCGCCTGGTGGTATTACCAGTATCAGAGAGACAAGATCGAGGATGATCTGGAGATGACCATGGTTT

GCCATCGGCCTGAGGGACTGGAGCAGCTTGAGGCACAGACGAACTTCACCAAGAGAGAACTGCAAGTCCTTTACCGGGGA

TTCAAAAACGAGTGCCCCAGTGGTGTGGTTAACGAAGAGACATTCAAGCAGATCTACGCTCAGTTTTTCCCTCATGGAGA

TGCCAGCACATACGCACATTACCTCTTCAATGCCTTCGACACCACCCAGACAGGCTCTGTAAAGTTCGAGGACTTTGTGA

CTGCTCTGTCGATTTTACTGAGAGGAACGGTCCATGAAAAACTGAGGTGGACGTTTAATTTGTACGACATCAATAAAGAC

GGCTACATAAACAAAGAGGAGATGATGGACATAGTGAAAGCCATCTATGACATGATGGGGAAATACACCTATCCTGTGCT

CAAAGAGGACACTCCCAGGCAGCACGTGGACGTCTTCTTCCAGAAAATGGATAAAAATAAAGATGGCATTGTAACGTTAG

ACGAATTTCTCGAGTCCTGTCAGGAGGATGACAACATCATGAGGTCTCTACAGCTGTTCCAAAATGTCATGTAACTGAGG

ACACTGGCCATCCTGCTCTCAGAGACACTGACAAACACCTCAATGCCCTGATCTGCCCTTGTTCCAGTTTTACACATCAA

CTCTCGGGACAGAAATACCTTTTACACTTTGGAAGAATTCTCTGCTGAAGACTTTCTACAAAACCTGGCACCGCGTGGCT

CAGTCTCTGATTGCCAACTCTTCCTCCCTCCTCCTCTTGAGAGGGACGAGCTGAAATCCGAAGTTTGTTTTGGAAGCATG

CCCATCTCTCCATGCTGCTGCTGCCCTGTGGAAGGCCCCTCTGCTTGAGCTTAAACAGTAGTGCACAGTTTTCTGCGTAT

ACAGATCCCCAACTCACTGCCTCTAAGTCAGGCAGACCCTGATCAATCTGAACCAAATGTGCACCATCCTCCGATGGCCT

CCCAAGCCAATGTGCCTGCTTCTCTTCCTCTGGTGGGAAGAAAGAACGCTCTACAGAGCACTTAGAGCTTACCATGAAAA

TACTGGGAGAGGCAGCACCTAACACATGTAGAATAGGACTGAATTATTAAGCATGGTGGTATCAGATGATGCAAACAGCC

CATGTCATTTTTTTTCCAGAGGTAGGGACTAATAATTCTCCCACACTAGCACCTACGATCATAGAACAAGTCTTTTAACA

CATCCAGGAGGGAAACCGCTGCCCAGTGGTCTATCCCTTCTCTCCATCCCCTGCTCAAGCCCAGCACTGCATGTCTCTCC

CGGAAGGTCCAGAATGCCTGTGAAATGCTGTAACTTTTATACCCTGTTATAATCAATAAACAGAACTATTTCGTACAAAA

AAAAAAAAAAAAA

RAT IVL PROTEIN

MGAVMGTFSSLQTKQRRPSKDIAWWYYQYQRDKJEDDLEMTMVCHRPEGLEQLEAQTNFTKRELQVLYRGFKNECPSGVV

NEETFKQIYAQFFPHGDASTYAHYLFNAFDTTQTGSVKFEDFVTALSILLRGTVHEKLRWTFNLYDINKDGYINKEEMMD

IVKAIYDMMGKYTYPVLKEDTPRQHVDVFFQKMDKNKDGIVTLDEFLESCQEDDNIMRSLQLFQNVM

FIGURE 4

MOUSE IVL DNA (CD: 77-760)

ATCCACACCGATTTCTTTTCAGGGGAGGGAAGAGACAGGGCCTGGGGTCCCAAGACGCACACAAGTCTTCGCTGCCATGG

GGGCCGTCATGGGCACTTTCTCCTCCCTGCAGACCAAACAAAGGCGACCCTCTAAAGACATCGCCTGGTGGTATTACCAG

TATCAGAGAGACAAGATTGAGGATGAGCTAGAGATGACCATGGTTTGCCACCGGCCTGAGGGACTGGAGCAGCTTGAGGC

ACAGACGAACTTCACCAAGAUAUAACTGCAAGTCTTGTACCGGGGATTCAAAAACGAGTGCCTAGCGGTGTGGTCAATG

AAGAAACATTCAAGCAGATCTACGCTCAGTTTTTCCCTCACGGAGATGCCAGCACATATGCACATTACCTCTTCAATGCC

TTCGACACCACCCAGACAGGCTCTGTAAAGTTCGAGGACTTTGTGACTGCTCTGTCGATTTTACTGAGAGGGACAGTCCA

TGAAAAACTAAGGTGGACGTTTAATTTGTATGACATCAATAAAGACGGCTACATAAACAAAGAGGAGATGATGGACATAG

TCAAAGCCATCTATGACATGATGGGGAAATACACCTATCCTGTGCTCAAAGAGGACACTCCCAGGCAGCATGTGGATGTC

TTCTTCCAGAAAATGGATAAAAATAAAGATGGCATTGTAACGTTAGATGAATTTCTTGAATCATGTCAGGAGGATGACAA

CATCATGAGATCTCTACAGCTGTTCCAAAATGTCATGTAACTGAGGACACTGGCCATTCTGCTCTCAGAGACACTGACAA

ACACCTTAATGCCCTGATCTGCCCTTGTTCCAATTTTACACACCAACTCTTGGGACAGAAATACCTTTTACACTTTGGAA

GAATTCTCTGCTGAAGACTTTCTACAAAACCTGGCACCACGTGGCTCTGTCTCTGAGGGACGAGCGGAGATCCGACTTTG

TTTTGGAAGCATGCCCATCTCTTCATGCTGCTGCCCTGTGGAAGGCCCCTCTGCTTGAGCTTAATCAATAGTGCACAGTT

TTATGCTTACACATATCCCCAACTCACTGCCTCCAAGTCAGGCAGACTCTGATGAATCTGAGCCAAATGTGCACCATCCT

CCGATGGCCTCCCAAGCCAATGTGCCTGCTTCTCTTCCTCTGGTGGGAAGAAAGAGTGTTCTACGGAACAATTAGAGCTT

ACCATGAAAATATTGGGAGAGGCAGCACCTAACACATGTAGAATAGGACTGAATTATTAAGCATGGTGATATCAGATGAT

GCAAATTGCCCATGTCATTTTTTTCAAAGGTAGGGACAAATGATTCTCCCACACTAGCACCTGTGGTCATAGAGCAAGTC

TCTTAACATGCCCAGAAGGGGAACCACTGTCCAGTGGTCTATCCCTCCTCTCCATCCCCTGCTCAAACCCAGCACTGCAT

GTCCCTCCAAGAAGGTCCAGAATGCCTGCGAAACGCTGTACTTTTATACCCTGTTCTAATCAATAAACAGAACTATTTCG

TACAAAAAAAAAAAAAAAAA

MOUSE IVL PROTEIN

MGAVMGTFSSLQTKQRRPSKDIAWWYYQVQRDKIEDELEMTMVCHRPEGLEQLEAQTNFTKRELQVLYRGFKNECPSGVV

NEETFKQIYAQFFPHGDASTYAHYLFNAFDTTQTGSVKFEDFVTALSILLRGTVHEKLRWTFNLYDINKDGYINKEEMMD

IVKAIYDMMGKYTYPVLKEDTPRQHVDVFFQKMDKNKDGIVTLDEFLESCQEDDNIMRSLQLFQNVM

FIGURE 5

RAT IVN DNA (FIRST-PASS, PARTIAL; CD: 345-955)

GTCCGGGCACACAACCCCTGGATTCTTCGGAGAATATGCCGTGACGGTGTTGCCAATTATTAGTTCTCTTGGCTAGCAGA

TGTTTAGGGACTGGTTAAGCCTTTGGAGAAATTACCTTAGGAAAACGGGGAAATAAAAGCAAAGATTACCATGAATTGCA

AGATTACCTAGCAATTGCAAGGTAGGAGGAGAGAGGTGGAGGGCGGAGTAGACAGGAGGGAGGGAGAAAGTGAGAGGAAG

CTAGACCTGGTGGAAATAACCCTGCACTTGGAACAGCGGCAAAGAAGCGCGATTTTCCAGCTTTAAATGCCTGCCCGCGTT

CTGCTTGCCTACCCGGGAACGGAGATGTTGACCCAGGGCGAGTCTGAAGGGCTCCAGACCTTGGGGATAGTAGTGGTCCT

GTGTTCCTCTCTGAAACTACTGCACTACCTCGGGCTGATTGACTTGTCGGATGACAAGATCGAGGATGATCTGGAGATGA

CCATGGTTTGCCATCGGCCTGAGGGACTGGAGCAGCTTGAGGCACAGACGAACTTCACCAAGAGAGAACTGCAAGTCCTT

TACCGGGGATTCAAAAACGAGTGCCCCAGTGGTGTGGTTAACGAAGAGACATTCAAGCNGATCTACGCTCAGTTTTCCC

TCATGGAGATGCCAGCACATACGCACATTACCTCTTCAATGCCTTCGACACCACCCAGACAGGCTCTGTAAAGTTCGAGG

ACTTTGTGACTGCTCTGTCGATTTTACTGAGAGGAACGGTCCATGAAAAACTGAAGTGGACGTTTAATTTGTACGACATC

AATAAAGACGGCTACATAAACAAAGAGGAGATGATGGACATAGTGAAAGCCATCTATGACATGATGGGGAAATACACCTA

TCTTGTGCTCAAAGAGGACACTTCCAGGCAGCACGTGGACGTCTTCTTCCAGAAAATGGATAAAAATAAAGATGG

RAT IVN PROTEIN (PARTIAL)

MLTQGESEGLQTLGIVVVLCSSLKLLHYLGLIDLSDDKIEDDLEMTMVCHRPEGLEQLEAQTNFTKRELQVLYRGFKNEC

PSGVVNEETFKXIYAQFFPHGDASTYAHYLFNAFDTTQTGSVKFEDFVTALSILLRGTVHEKLKWTFNLYDINKDGYINK

EEMMDIVKAIYDMMGKYTYLVLKEDTSRQHVDVFFQKMDKNKD

FIGURE 6

HUMAN 9QL DNA (CD:207-1019)

CTCACCTGCTGCCTAGTGTTCCCTCTCCTGCTCCAGGACCTCCGGGTAGACCTCAGACCCCGGGCCCATTCCCAGACTCA

GCCTCAGCCCGGACTTCCCCAGCCCCGACAGCACAGTAGGCCGCCAGGGGGCGCCGTGTGAGCGCCCTATCCCGGCCACC

CGGCGCCCCCTCCCACGGCCCGGGCGGGAGCGGGGCGCCGGGGGCCATGCGGGGCCAGGGCCGCAAGGAGAGTTTGTCCG

ATTCCCGAGACCTGGACGGCTCCTACGACCAGCTCACGGGCCACCCTCCAGGGCCCACTAAAAAAGCGCTGAAGCAGCGA

TTCCTCAAGCTGCTGCCGTGCTGCGGGCCCCAAGCCCTGCCCTCAGTCAGTGAAACATTAGCCGCCCCAGCCTCCCTCCG

CCCCCACAGACCCCGCCTGCTGGACCCAGACAGCGTGGACGATGAATTTGAATTGTCCACCGTGTGTCACCGGCCTGAGG

GTCTGGAGCAGCTGCAGGAGCAAACCAAATTCACGCGCAAGGAGTTGCAGGTCCTGTACCGGGGCTTCAAGAACGAATGT

CCCAGCGGAATTGTCAATGAGGAGAACTTCAAGCAGATTTACTCCCAGTTCTTTCCTCAAGGAGACTCCAGCACCTATGC

CACTTTTCTCTTCAATGCCTTTGACACCAACCATGATGGCTCGGTCAGTTTTGAGGACTTTGTGGCTGGTTTGTCCGTGA

TTCTTCGGGGAACTGTAGATGACAGGCTTAATTGGGCCTTCAACCTGTATGACCTTAACAAGGACGGCTGCATCACCAAG

GAGGAAATGCTTGACATCATGAAGTCCATCTATGACATGATGGGCAAGTACACGTACCCTGCACTCCGGGAGGAGGCCCC

AAGGGAACACGTGGAGAGCTTCTTCCAGAAGATGGACAGAAACAAGGATGGTGTGGTGACCATTGAGGAATTCATTGAGT

CTTGTCAAAAGGATGAGAACATCATGAGGTCCATGCAGCTCTTTGACAATGTCATCTAGCCCCCAGGAGAGGGGGTCAGT

GTTTCCTGGGGGGACCATGCTCTAACCCTAGTCCAGGCGGACCTCACCCTTCTCTTCCCAGGTCTATCCTCATCCTACGC

CTCCCTGGGGGCTGGAGGGATCCAAGAGCTTGGGGATTCAGTAGTCCAGATCTCTGGAGCTGAAGGGGCCAGAGAGTGGG

CAGAGTGCATCTCGGGGGGTGTTCCCAACTCCCACCAGCTCTCACCCCCTTCCTGCCTGACACCCAGTGTTGAGAGTGCC

CCTCCTGTAGGAATTGAGCGGTTCCCCACCTCCTACCCTACTCTAGAAACACACTAGAGCGATGTCTCCTGCTATGGTGC

TTCCCCCATCCCTGACCTCATAAACATTTCCCCTAAGACTCCCCTCTCAGAGAGAATGCTCCATTCTTGGCACTGGCTGG

CTTCTCAGACCAGCCATTGAGAGCCCTGTGGGAGGGGGACAAGAATGTATAGGGAGAAATCTTGGGCCTGAGTCAATGGA

TAGGTCCTAGGAGGTGGGTGGGGTTGAGAATAGAAGGGCCTGGACAGATTATGATTGCTCAGGCATACCAGGTTATAGCT

CCAAGTTCCACAGGTCTGCTACCACAGGCCATCAAAATATAAGTTTCCAGGCTTTGCAGAAGACCTTGTCTCCTTAGAAA

TGCCCCAGAAATTTTCCACACCCTCCTCGGTATCCATGGAGAGCCTGGGGCCAGATATCTGGCTCATCTCTGGCATTGCT

TCCTCTCCTTCCTTCCTGCATGTGTTGGTGGTGGTTGTGGTGGGGGAATGTGGATGGGGGGATGTCCTGGCTGATGCCTGC

CAAAATTTCATCCCACCCTCCTTGCTTATCGTCCCTGTTTTGAGGGCTATGACTTGAGTTTTTGTTTCCCATGTTCTCTA

TAGACTTGGGACCTTCCTGAACTTGGGGCCTATCACTCCCCACAGTGGATGCCTTAGAAGGGAGAGGGAAGGAGGGAGGC

AGGCATAGC

FIGURE 7

HUMAN 9QL PROTEIN

MRGQGRKESLSDSRDLDGSYDQLTGHPPGPTKKALKQRFLKLLPCCGPQALPSVSETLAAPASLRPHRPRLLDPDSVDDE

FELSTVCIPPTCLEQLQEQTRLTTRAELQVLYRGFKNECTSGIYNEENFKQIYSQFTPQGDSSTYATFLNALDTNHDGSV

SFEDFVAGLSVILRGTVDDRLNWAFNLYDLNKDGCITKEEMLDIMKSIYDMMGKYTYPALREEAPREHVESFFQKMDRNK

DGVVTIEEFIESCQKDENIMRSMQLFDNVI

FIGURE 7 (cont'd)

RAT 9QL DNA (PARTIAL; CD: 2-775)

CCGAGATCTGGACGGCTCCTATGACCAGCTTACGGGCCACCCTCCAGGGCCCAGTAAAAAAGCCCTGAAGCAGCGTTTCC

TCAAGCTGCTGCCGTGCTGCGGGCCCCAAGCCCTGCCCTCAGTCAGTGAAACATTAGCTGCCCCAGCCTCCCTCCGCCCC

CACAGACCCCCGCCCCGCTGGACCCAGACAGCGTAGAGGATGAGTTTGAATTATCCACGGTGTGTCACCGACCTGAGGGCCT

GGAACAACTCCAGGAACAGACCAAGTTCACACGCAGAGAGCTGCAGGTCCTGTACCGAGGCTTCAAGAACGAATGCCCCA

GTGGGATTGTCAACGAGGAGAACTTCAAGCAGATTTATTCTCAGTTCTTTCCCCAAGGAGACTCCAGCAACTATGCTACT

TTTCTCTTCAATGCCTTTGACACCAACCACGATGGCTCTGTCAGTTTTGAGGACTTTGTGGCTGGTTTGTCGGTGATTCT

TCGGGGGACCATAGATGATAGACTGAGCTGGGCTTTCAACTTATATGACCTCAACAAGGACGGCTGTATCACAAAGGAGG

AAATGCTTGACATTATGAAGTCCATCTATGACATGATGGGCAAGTACACATACCCTGCCCTCCGGGAGGAGGCCCCAAGA

GAACACGTGGAGAGCTTCTTCCAGAAGATGGACAGGAACAAGGACGGCGTGGTGACCATCGAGGAATTCATCGAGTCTTG

TCAACAGGACGAGAACATCATGAGGTCCATGCAGCTCTTTGATAATGTCATCTAGCTCCCCAGGGAGAGGGGTTAGTGTG

TCCTAGGGTGACCAGGCTGTAGTCCTAGTCCAGACGAACCTAACCCTCTCTCTCCAGGCCTGTCCTCATCTTACCTGTAC

CCTGGGGGCTGTAGGGATTCAATATCCTGGGGCTTCAGTAGTCCAGATCCCTGAGCTAAGTCACAAAAGTAGGCAAGAGT

AGGCAAGCTAAATCTGGGGGCTTCCCAACCCCCGACAGCTCTCACCCCTTCTCAACTGATACCTAGTGCTGAGGACACCC

CTGGTGTAGGGACCAAGTGGTTCTCCACCTTCTAGTCCCACTCTAGAAACCACATTAGACAGAAGGTCTCCTGCTATGGT

GCTTTÇCCCATCCCTAATCTCTTAGATTTTCCTCAAGACTCCCTTCTCAGAGAACACGCTCTGTCCATGTCCCCAGCTGG

GGACATGGACAGAGCGTGTTCTCTAGTTCTAGATCGCGAGCGGCCGC

RAT 9QL PROTEIN (PARTIAL)

RDLDGSYDQLTGHPPGPSKKALKQRFLKLLPCCGPQALPSVSETLAAPASLRPHRPRPLDPDSVEDEFELSTVCHRPEGL

EQLQEQTKFTRRELQVLYRGFKNECPSGIVNEENFKQIYSQFFPQGDSSNYATFLFNAFDTNHDGSVSFEDFVAGLSVIL

RGTIDDRLSWAFNLYDLNKDGCITKEEMLDIMKSIYDMMGKYTYPALREEAPREHVESFFQKMDRNKDGVVTIEEFIESC

QQDENIMRSMQLFDNVI

FIGURE 8

MOUSE 9QL DNA (CD: 181-993)

CGGGACTCTGAGGTGGGCCCTAAAATCCAGCGCTCCCCAGAGAAAAGCCTTGCCAGCCCCTACTCCCGGCCCCCAGCCCC

AGCAGGTCGCTGCGCCGCCAGGGGGCACTGTGTGAGCGCCCTATCCTGGCCACCCGGCGCCCCCTCCCACGGCCCAGGCG

GGAGCGGGGCGCCGGGGGCCATGCGGGGCCAAGGCCGAAAGGAGAGTTTGTCCGAATCCCGAGATTTGGACGGCTCCTAT

GACCAGCTTACGGGCCACCCTCCAGGGCCCAGTAAAAAAGCCCTGAAGCAGCGTTTCCTCAAGCTGCTGCCGTGCCCCC

GCCCCAAGCCCTGCCCTCAGTCAGTGAAACATTAGCTGCCCCAGCCTCCCTCCGCCCCACAGACCCCGCCCGCTGGACC

CAGACAGCGTGGAGGATGAGTTTGAACTATCCACGGTGTGCCACCGGCCTGAGGGTCTGGAACAACTCCAGGAACAAACC

AAGTTCACACGCAGAGAGTTGCAGGTCCTGTACAGAGGCTTCAAGAACGAATGTCCCAGCGGAATTGTCAACGAGGAGAA

CTTCAAGCAAATTTATTCTCAGTTCTTTCCCCAAGGAGACTCCAGCAACTACGCTACTTTTCTCTTCAATGCCTTTGACA

CCAACCATGATGGCTCTGTCAGTTTTGAGGACTTTGTGGCTGGTTTGTCAGTGATTCTTCGGGGAACCATAGATGATAGA

CTGAACTGGGCTTTCAACTTATATGACCTCAACAAGGATGGCTGTATCACGAAGGAGGAAATGCTCGACATCATGAAGTC

CATCTATGACATGATGGGCAAGTACACCTACCCTGCCCTCCGGGAGGAGGCCCCGAGGGAACACGTGGAGAGCTTCTTCC

AGAAGATGGACAGAAACAAGGACGGCGTGGTGACCATTGAGGAATTCATTGAGTCTTGTCAACAGGACGAGAACATCATG

AGGTCCATGCAACTCTTTGATAATGTCATCTAGCTCCCCAGGGAGAGGGGTTAGTGTGTCCCAGGGTAACCATGCTGTAG

CCCTAGTCCAGGCAAACCTAACCCTCCTCTCCCCGGGTCTGTCCTCATCCTACCTGTACCCTGGGGGCTGTAGGGATTCA

ACATCCTGGCGCTTCAGTAGTCCAGATCCCTGAGCTAAGTGGCGAGAGTAGGCAAGCTAAGTCTTTGGAGGGTGGGTGGG

GGCGCGCAGATTCCCAACCCCGACGACTCTCACCCCTTTCTCGACTGATACCCAGTGCTGAGGCTACCCCTGGTGTCGG

GAACGACCAAAGTGGTTCTCTGCCTCCCCAGCCCACTCTAGAGACCCACACTAGACGGGAATATCTCCTGCTATGGTGCT

TTCCCCATCCCTGACCGCAGATTTTCCTCCTAAGACTCCCTTCTCAGAGAATATGCTTTTGTCCCTTGTCCCTGGCTGGC

TTTTCAGCCTAGCCTTTGAGGACCCTGTGGGAGGGGAGAATAAGAAAGCAGACAAAATCTTGGCCCTGAGCCAGTGGTTA

GGTCCTAGGAATCAGGCTGGAGTGGAGACCAGAAAGCCTGGGCAGGCTATGAGAGCCCCAGGTTGGCTTGTCACCGCCAG

GTTCCACAGGGCTGCTGCTCTGGGTCAGCAGAGTATGAGTTTCCAGACTTTCCAGAAGGCCTTATGTCCTTAGCAATGTC

CCAGAAATTCACCATACACTTCTCAGTGTCTTAGGATCCAGATGTCCGGTCCATCCCTGAAACCTCTCCCTCCTCCTTGC

TCCTATGGTGGGAGTGGTGGCCAGGGGACGATGAGTGAGCCGGTGTCCTGGATGATGCCTGTCAAGGTCCCACCTACCCT

CCGGCTGTCAAGCCGTTCTGGTGACCCTGTTTGATTCTCCATGACCCCTGTCTAGATGTAGAGGTGTGGAGTGAGTCTAG

TGGCAGCCTTAGGGGAATGGGAAGAACGAGAGGGGCACTCCATCTGAACCCAGTGTGGGGGCATCCATTCGAATCTTTGC

CTGGCTCCCCACAATGCCCTAGGATCCTCTAGGGTCCCCACCCCCACTCTTTAGTCTACCCAGAGATGCTCCAGAGCTCA

CCTAGAGGGCAGGGACCATAGGATCCAGGTCCAACCTGTCATCAGCATCCGGCCATGCTGCTGCTGCTTATTAATAAACC

TGCTTGTCGTTCAGCGCCCCTTCCCAGTCAGCCAGGGTCTGAGGGGAAGCCCCCCACTTTCCCGCCTCCTGTCAGACATT

GTTGACTGCTTTGCATTTTGGGCTCTTCTACCTATATTTTGTATAATAAGAAAGACACCAGATCCAATAAAACACATGGC

TATGCACAAAAAAAAAAAAAAAA

MOUSE 9QL PROTEIN

MRGQGRKESLSESRDLDGSYDQLTGHPPGPSKKALKQRFLKLLPCCGPQALPSVSETLAAPASLRPHRPRPLDPDSVEDE

FELSTVCHRPEGLEQLQEQTKFTRRELQVLYRGFKNECPSGIVNEENFKQIYSQFFPQGDSSNYATFLFNAFDTNHDGSV

SFEDFVAGLSVILRGTIDDRLNWAFNLYDLNKDGCITKEEMLDIMKSIYDMMGKYTYPALREEAPREHVESFFQKMDRNK

DGVVTIEEFIESCQQDENIMRSMQLFDNVI

FIGURE 9

HUMAN 9QM DNA (CD: 207-965)

CTCACCTGCTGCCTAGTGTTCCCTCTCCTGCTCCAGGACCTCCGGGTAGACCTCAGACCCCGGGCCCATTCCCAGACTCA

GCCTCAGCCCGGACTTCCCCAGCCCCGACAGCACAGTAGGCCGCCAGGGGGCGCCGTGTGAGCGCCCTATCCCGGCCACC

CGGCGCCCCCTCCCACGGCCCGGGCGGGAGCGGGGCGCCGGGGGCCATGCGGGGCCAGGGCCGCAAGGAGAGTTTGTCCG

ATTCCCGAGACCTGGACGGCTCCTACGACCAGCTCACGGGCCACCCTCCAGGGCCCACTAAAAAAGCGCTGAAGCAGCGA

TTCCTCAAGCTGCTGCCGTGCTGCGGGCCCCAAGCCCTGCCCTCAGTCAGTGAAAACAGCGTGGACGATGAATTTGAATT

GTCCACCGTGTGTCACCGGCCTGAGGGTCTGGAGCAGCTGCAGGAGCAAACCAAATTCACGCGCAAGGAGTTGCAGGTCC

TGTACCGGGGCTTCAAGAACGAATGTCCCAGCGGAATTGTCAATGAGGAGAACTTCAAGCAGATTTACTCCCAGTTCTTT

CCTCAAGGAGACTCCAGCACCTATGCCACTTTTCTCTTCAATGCCTTTGACACCAACCATGATGGCTCGGTCAGTTTTGA

GGACTTTGTGGCTGGTTTGTCCGTGATTCTTCGGGGAACTGTAGATGACAGGCTTAATTGGGCCTTCAACCTGTATGACC

TTAACAAGGACGGCTGCATCACCAAGGAGGAAATGCTTGACATCATGAAGTCCATCTATGACATGATGGGCAAGTACACG

TACCCTGCACTCCGGGAGGAGGCCCCAAGGGAACACGTGGAGAGCTTCTTCCAGAAGATGGACAGAAACAAGGATGGTGT

GGTGACCATTGAGGAATTCATTGAGTCTTGTCAAAAGGATGAGAACATCATGAGGTCCATGCAGCTCTTTGACAATGTCA

TCTAGCCCCCAGGAGAGGGGGTCAGTGTTTCCTGGGGGGACCATGCTCTAACCCTAGTCCAGGCGGACCTCACCCTTCTC

TTCCCAGGTCTATCCTCATCCTACGCCTCCCTGGGGGCTGGAGGGATCCAAGAGCTTGGGGATTCAGTAGTCCAGATCTC

TGGAGCTGAAGGGGCCAGAGAGTGGGCAGAGTGCATCTCGGGGGGTGTTCCCAACTCCCACCAGCTCTCACCCCCTTCCT

GCCTGACACCCAGTGTTGAGAGTGCCCCTCCTGTAGGAATTGAGCGGTTCCCCACCTCCTACCCTACTCTAGAAACACAC

TAGAGCGATGTCTCCTGCTATGGTGCTTCCCCCATCCCTGACCTCATAAACATTTCCCCTAAGACTCCCCTCTCAGAGAG

AATGCTCCATTCTTGGCACTGGCTGGCTTCTCAGACCAGCCATTGAGAGCCCTGTGGGAGGGGGACAAGAATGTATAGGG

AGAAATCTTGGGCCTGAGTCAATGGATAGGTCCTAGGAGGTGGGTGGGGTTGAGAATAGAAGGGCCTGGACAGATTATGA

TTGCTCAGGCATACCAGGTTATAGCTCCAAGTTCCACAGGTCTGCTACCACAGGCCATCAAAATATAAGTTTCCAGGCTT

TGCAGAAGACCTTGTCTCCTTAGAAATGCCCCAGAAATTTTCCACACCCTCCTCGGTATCCATGGAGAGCCTGGGGCCAG

ATATCTGGCTCATCTCTGGCATTGCTTCCTCTCCTTCCTTCCTGCATGTGTTGGTGGTGGTTGTGGTGGGGGAATGTGGA

TGGGGGATGTCCTGGCTGATGCCTGCCAAAATTTCATCCCACCCTCCTTGCTTATCGTCCCTGTTTTGAGGGCTATGACT

TGAGTTTTTGTTTCCCATGTTCTCTATAGACTTGGGACCTTCCTGAACTTGGGGCCTATCACTCCCCACAGTGGATGCCT

TAGAAGGGAGAGGGAAGGAGGGAGGCAGGCATAGC

FIGURE 10

HUMAN 9QM PROTEIN

MRGQGRKESLSDSRDLDGSYDQLTGHPPGPTKKALKQRFLKLLPCCGPQALPSVSENSVDDEFELSTVCHRPEGLEQLQE

QTKFTRKELQVLYRGFKNECPSGIVNEENFKQIYSQFFPQGDSSTYATFLFNAFDTNHDGSVSFEDFVAGLSVILRGTVD

DRLNWAFNLYDLNKDGCITKEEMLDIMKSIYDMMGKYTYPALREEAPREHVESFFQKMDRNKDGVVTIEEFIESCQKDEN

IMRSMQLFDNVI

FIGURE 10 (cont'd)

RAT 9QM DNA (CD: 214-972)

CTCACTTGCTGCCCAAGGCTCCTGCTCCTGCCCCAGGACTCTGAGGTGGGCCCTAAAACCCAGCGCTCTCTAAAGAAAAG

CCTTGCCAGCCCCTACTCCCGGCCCCCAACCCCAGCAGGTCGCTGCGCCGCCAGGGGGCGCTGTGTGAGCGCCCTATTCT

GGCCACCCGGCGCCCCCTCCCACGGCCCAGGCGGGAGCGGGGCGCCGGGGGCCATGCGGGGCCAAGGCAGAAAGGAGAGT

TTGTCCGAATCCCGAGATCTGGACGGCTCCTATGACCAGCTTACGGGCCACCCTCCAGGGCCCAGTAAAAAAGCCCTGAA

GCAGCGTTTCCTCAAGCTGCTGCCGTGCTGCGGGCCCCAAGCCCTGCCCTCAGTCAGTGAAAACAGCGTAGAGGATGAGT

TTGAATTATCCACGGTGTGTCACCGACCTGAGGGCCTGGAACAACTCCAGGAACAGACCAAGTTCACACGCAGAGAGCTG

CAGGTCCTGTACCGAGGCTTCAAGAACGAATGCCCCAGTGGGATTGTCAACGAGGAGAACTTCAAGCAGATTTATTCTCA

GTTCTTTCCCCAAGGAGACTCCAGCAACTATGCTACTTTTCTCTTCAATGCCTTTGACACCAACCACGATGGCTCTGTCA

GTTTTGAGGACTTTGTGGCTGGTTTGTCGGTGATTCTTCGGGGGACCATAGATGATAGACTGAGCTGGGCTTTCAACTTA

TATGACCTCAACAAGGACGGCTGTATCACAAAGGAGGAAATGCTTGACATTATGAAGTCCATCTATGACATGATGGGCAA

GTACACATACCCTGCCCTCCGGGAGGAGGCCCCAAGAGAACACGTGGAGAGCTTCTTCCAGAAGATGGACAGGAACAAGG

ACGGCGTGGTGACCATCGAGGAATTCATCGAGTCTTGTCAACAGGACGAGAACATCATGAGGTCCATGCAGCTCTTTGAT

AATGTCATCTAGCTCCCCAGGGAGAGGGGTTAGTGTGTCCTAGGGTGACCAGGCTGTAGTCCTAGTCCAGACGAACCTAA

CCCTCTCTCTCCAGGCCTGTCCTCATCTTACCTGTACCCTGGGGGCTGTAGGGATTCAATATCCTGGGGCTTCAGTAGTC

CAGATCCCTGAGCTAAGTCACAAAAGTAGGCAAGAGTAGGCAAGCTAAATCTGGGGGCTTCCCAACCCCCGACAGCTCTC

ACCCCTTCTCAACTGATACCTAGTGCTGAGGACACCCCTGGTGTAGGGACCAAGTGGTTCTCCACCTTCTAGTCCCACTC

TAGAAACCACATTAGACAGAAGGTCTCCTGCTATGGTGCTTTCCCCATCCCTAATCTCTTAGATTTTCCTCAAGACTCCC

TTCTCAGAGAACACGCTCTGTCCATGTCCCCAGCTGGCTTCTCAGCCTAGCCTTTGAGGGCCCTGTGGGGAGGCGGGGAC

AAGAAAGCAGAAAAGTCTTGGCCCCGAGCCAGTGGTTAGGTCCTAGGAATTGGCTGGAGTGGAGGCCAGAAAGCCTGGGC

AGATGATGAGAGCCCAGCTGGGCTGTCACTGCAGGTTCCGGGGGCTACAGCCCTGGGTCAGCAGAGTATGAGTTCCCAGA

CTTTCCAGAAGGTCCTTAGCAATGTCCCAGAAATTCACCGTACACTTCTCAGTGTCTTAGGAGGGCCCGGGATCCAGATG

TCTGGTTCATCCCTGAATCCTCTCCCTCCTTCTTGCTCGTATGGTGGGAGTGGTGGCCAGGGGAAGATGAGTGGTGTCCC

GGATGATGCCTGTCAAGGTCCCACCTCCCCTCCGGCTGTTCTCATGACAGCTGTTTGGTTCTCCATGACCCCTATCTAGA

TGTAGAGGCATGGAGTGAGTCAGGGATTTCCCGAACTTGAGTTTTACCACTCCTCCTAGTGGCTGCCTTAGGGGAATGGG

AAGAACCCAGTGTGGGGGCACCCATTAGAATCTTTGCCCGGCTCCTCACAATGCCCTAGGGTCCCCTAGGGTACCCGCTC

CCTCTGTTTAGTCTACCCAGAGATGCTCCTGAGCTCACCTAGAGGGTAGGGACGGTAGGCTCCCAGGTCCAACCTCTCCAG

GTCAGCACCCTGCCATGCTGCTGCTCCTCATTAACAAACCTGCTTGTCTCCTCCTGCGCCCCTTCTCAGTCAGCCAGGGT

CTGAGGGGAAGGGCCTCCCGTTTCCCCATCCGTCAGACATGGTTGACTGCTTTGCATTTTGGGCTCTTCTATCTATTTTG

TAAAATAAGACATCAGATCCAATAAAACACACGGCTATGCACAAAAAAAAAAAAAAAAAA

RAT 9QM PROTEIN

MRGQGRKESLSESRDLDGSYDQLTGHPPGPSKKALKQRFLKLLPCCGPQALPSVSENSVEDEFELSTVCHRPEGLEQLQE

QTKFTRRELQVLYRGFKNECPSGIVNEENFKQIYSQFFPQGDSSNYATFLFNAFDTNHDGSVSFEDFVAGLSVILRGTID

DRLSWAFNLYDLNKDGCITKEEMLDIMKSIYDMMGKYTYPALREEAPREHVESFFQKMDRNKDGVVTIEEFIESCQQDEN

IMRSMQLFDNVI

FIGURE 11

HUMAN 9QS DNA (CD:207-869)

CTCACCTGCTGCCTAGTGTTCCCTCTCCTGCTCCAGGACCTCCGGGTAGACCTCAGACCCCGGGCCCATTCCCAGACTCA

GCCTCAGCCCGGACTTCCCCAGCCCCGACAGCACAGTAGGCCGCCAGGGGGCGCCGTGTGAGCGCCCTATCCCGGCCACC

CCGCCCCCCCTCCCACGGCCCGGGCCGGGAGCGGGGCGCCGGGGGCCATGCGGGGCCAGGGCCGCAAGGAGAGTTTGTCCG

ATTCCCGAGACCTGGACGGCTCCTACGACCAGCTCACGGACAGCGTGGACGATGAATTTGAATTGTCCACCGTGTGTCAC

CGGCCTGAGGGTCTGGAGCAGCTGCAGGAGCAAACCAAATTCACGCGCAAGGAGTTGCAGGTCCTGTACCGGGGCTTCAA

GAACGAATGTCCCAGCGGAATTGTCAATGAGGAGAACTTCAAGCAGATTTACTCCCAGTTCTTTCCTCAAGGAGACTCCA

GCACCTATGCCACTTTTCTCTTCAATGCCTTTGACACCAACCATGATGGCTCGGTCAGTTTTGAGGACTTTGTGGCTGGT

TTGTCCGTGATTCTTCGGGGAACTGTAGATGACAGGCTTAATTGGGCCTTCAACCTGTATGACCTTAACAAGGACGGCTG

CATCACCAAGGAGGAAATGCTTGACATCATGAAGTCCATCTATGACATGATGGGCAAGTACACGTACCCTGCACTCCGGG

AGGAGGCCCCAAGGGAACACGTGGAGAGCTTCTTCCAGAAGATGGACAAGAACAAGGATGGTGTGGTGACCATTGAGGAA

TTCATTGAGTCTTGTCAAAAGGATGAGAACATCATGAGGTCCATGCAGCTCTTTGACAATGTCATCTAGCCCCCAGGAGA

GGGGGTCAGTGTTTCCTGGGGGGACCATGCTCTAACCCTAGTCCAGGCGGACCTCACCCTTCTCTTCCCAGGTCTATCCT

CATCCTACGCCTCCCTGGGGGCTGGAGGGATCCAAGAGCTTGGGGATTCAGTAGTCCAGATCTCTGGAGCTGAAGGGGCC

AGAGAGTGGGCAGAGTGCATCTCGGGGGGTGTTCCCAACTCCCACCAGCTCTCACCCCCTTCCTGCCTGACACCCAGTGT

TGAGAGTGCCCCTCCTGTAGGAATTGAGCGGTTCCCCACCTCCTACCCTACTCTAGAAACACACTAGAGCGATGTCTCCT

GCTATGGTGCTTCCCCCATCCCTGACCTCATAAACATTTCCCCTAAGACTCCCCTCTCAGAGAGAATGCTCCATTCTTGG

CACTGGCTGGCTTCTCAGACCAGCCATTGAGAGCCCTGTGGGAGGGGGACAAGAATGTATAGGGAGAAATCTTGGGCCTG

AGTCAATGGATAGGTCCTAGGAGGTGGGTGGGGTTGAGAATAGAAGGGCCTGGACAGATTATGATTGCTCAGGCATACCA

GGTTATAGCTCCAAGTTCCACAGGTCTGCTACCACAGGCCATCAAAATATAAGTTTCCAGGCTTTGCAGAAGACCTTGTC

TCCTTAGAAATGCCCCAGAAATTTTCCACACCCTCCTCGGTATCCATGGAGAGCCTGGGGCCAGATATCTGGCTCATCTC

TGGCATTGCTTCCTCTCCTTCCTTCCTGCATGTGTTGGTGGTGGTTGTGGTGGGGGAATGTGGATGGGGGATGTCCTGGC

TGATGCCTGCCAAAATTTCATCCCACCCTCCTTGCTTATCGTCCCTGTTTTGAGGGCTATGACTTGAGTTTTTGTTTCCC

ATGTTCTCTATAGACTTGGGACCTTCCTGAACTTGGGGCCTATCACTCCCCACAGTGGATGCCTTAGAAGGGAGAGGGAA

GGAGGGAGGCAGGCATAGC

FIGURE 12

MONKEY 9QS DNA (CD: 133-795)

CCCACGCGTCCGCCCACGCGTCCGCGGACGCGTGGGGTGCACTAGGCCGCCAGGGGGCGCCGTGTGAGCGCCCTATCCCG

GCCACCCGGCGCCCCCTCCCACGGACCGGGCGGGAGCGGGGCGCCGGGGGCCATGCGGGGCCAGGGCCGCAAGGAGAGTT

TGTCCGATTCCCGAGACCTGGACGGATCCTACGACCAGCTCACGGACAGCGTGGAGGATGAATTTGAATTGTCCACCGTG

TGTCACCGGCCTGAGGGTCTGGAGCAGCTGCAGGAGCAAACCAAATTCACGCGCAAGGAGTTGCAGGTCCTGTACCGGGG

CTTCAAGAACGAATGTCCGAGCGGAATTGTCAATGAGGAGAACTTCAAGCAAATTTACTCCCAGTTCTTTCCTCAAGGAG

ACTCCAGCACCTATGCCACTTTTCTCTTCAATGCCTTTGACACCCAACCATGATGGCTCGGTCAGTTTTGAGGACTTTGTG

GCTGGTTTGTCCGTGATTCTTCGGGGAACTGTAGATGACAGGCTTAATTGGGCCTTCAACTTGTATGACCTCAACAAGGA

CGGCTGCATCACCAAGGAGGAAATGCTTGACATCATGAAGTCCATCTATGACATGATGGGCAAGTACACATACCCTGCAC

TCCGGGAGGAGGCCCCAAGGGAACATGTGGAGAACTTCTTCCAGAAGATGGACAGAAACAAGGATGGCGTGGTGACCATT

GAGGAATTCATTGAGTCTTGTCAAAAGGATGAGAACATCATGAGGTCCATGCAGCTCTTTGACAATGTCATCTAGCCCCC

AGGAGAGGGGGTCAGTGTTTCCTGGGGGGACCATGCTCTAACCCTAGTCCAGGTGGACCTCACCCTTCTCTCCCAGGTC

TATCCTTGTCCTAGGCCTCCCTGGGGGCTGGAGGGATCCAAGAGCTTGGGGATTCAGTAGTCCAGATCTCTGGAGCTGAA

GGGGCCAGAGAGTGGGCAGAGTGCATCTTGGGGGGTGTTCCCAACTCCCACCAGCTTTCACCCGCTTCCTGCCTGACACC

CAGTGTTGAGAGTGCCCCTCCTGTAGGAACTGAGTGGTTCCCCACCTCCTACCCCCACTCTAGAAACACACTAGACAGAT

GTCTCGTGCTATGGTGCTTCCCCCATCCCTGACTTCATAAACATTTCCCCTAAAACTCCCTTCTCAGAGAGAATGCTCCA

TTCTTGGCACTGGCTGGCTTCTCAGACCAGCCTTTGAGAGCCCTGTGGGAGGGGGACAAGAATGTATAGGGGAGAAATCT

TGGGCCTGAGTCAATGGATAGGTCCTAGGAGGTGGCTGGGGTTGAGAATAGAAAGGCCTGGACACAATGTGATTGCTCAG

GCATACCAAGTTATAGCTCCAAGTTCCACAGGTCTGCTACCACAGGCCATCAAAATATAAGTTTCCAGGCTTTGCAGAAG

ACCTTGTCTCCTTGGAAATGCCCCAGATATTTTCCATACCCTCCTCGATATCCATGGAGAGCCTGGGGCTAGATATCTGG

CATATCCCTGGCATTGCTTCCTCTCCTTCCTTCCTGCATGTGTTGGTGGTGGTTGTGGCAGGGGAATGTGGATAGGAGAT

GTCCTGGCAGATGCCTGCCAAAGTTTCATCCCACCCTCCCTGCTCATCGCCCCTGTTTTGAGGGCTGTGACTTGAGTTTT

TGTTTCCCATGTTCTCTATAGACTTGGGACCTTCCTGAACTTGGGGCCTATCACTCCCCACAGTGGATGCCTTAGAAGGG

AGAGGGAAGGAGGGAGGCAGGCATAGCATCTGAACCCAGTGTGGGGGCATTCACTAGGATCTTCAATCAACCCGGGCTCT

CCCCAACCCCCCAGATAACCTCCTCAGTTCCCTAGAGTCTCCTCTTGCTCTACTCAATCTACCCAGAGATGCCCCTTAGC

ACACTCAGAGGGCAGGGACCATAGGACCCAGGTTCCAACCCCATTGTCAGCACCCCAGCCATGCTGCCATCCCTTAGCAC

ACCTGCTCGTCCCATTCAGCTTACCCTCCCAGTCAGCCAGAATCTGAGGGGAGGGCCCCCAGAGAGCCCCCTTCCCCATC

AGAAGACTGTTGACTGCTTTGCATTTTGGGCTCTTCTATATATTTTGTAAAATAAGAACTATACCAGATCTAATAAAACA

CAATGGCTATGCAAAAAAAAAAAAAAAAAA

MONKEY 9QS PROTEIN

MRGQGRKESLSDSRDLDGSYDQLTDSVEDEFELSTVCHRPEGLEQLQEQTKFTRKELQVLYRGFKNECPSGIVNEENFKQ

IYSQFFPQGDSSTYATFLFNAFDTNHDGSVSFEDFVAGLSVILRGTVDDRLNWAFNLYDLNKDGCITKEEMLDIMKSIYD

MMGKYTYPALREEAPREHVENFFQKMDRNKDGVVTIEEFIESCQKDENIMRSMQLFDNVI

FIGURE 13

RAT 9QC DNA (CD: 208-966)

TGCTGCCCAAGGCTCCTGCTCCTGCCCCAGGACTCTGAGGTGGGCCCTAAAACCCAGCGCTCTCTAAAGAAAAGCCTTGC

CAGCCCCTACTCCCGGCCCCCAACCCCAGCAGGTCGCTGCGCCGCCAGGGGGGCGCTGTGTGAGCGCCCTATTCTGGCCAC

CCGGCGCCCCCTCCCACGGCCCAGGCGGGAGCGGGGCGCCGGGGGCCATGCGGGGCCAAGGCAGAAAGGAGAGATTTGTCC

GAATCCCGAGATCTGGACGGCTCCTATGACCAGCTTACGGGCCACCCTCCAGGGCCCAGTAAAAAAGCCCTGAAGCAGCG

TTTCCTCAAGCTGCTGCCGTGCTGCGGGCCCCAAGCCCTGCCCTCAGTCAGTGAAAACAGCGTAGAGGATGAGTTTGAAT

TATCCACGGTGTGTCACCGACCTGAGGGCCTGGAACAACTCCAGGAACAGACCAAGTTCACACGCAGAGAGCTGCAGGTC

CTGTACCGAGGCTTCAAGAACGAATGCCCCAGTGGGATTGTCAACGAGGAGAACTTCAAGCAGATTTATTCTCAGTTCTT

TCCCCAAGGAGACTCCAGCAACTATGCTACTTTTCTCTTCAATGCCTTTGACACCAACCACGATGGCTCTGTCAGTTTTG

AGGACTTTGTGGCTGGTTTGTCGGTGATTCTTCGGGGGACCATAGATGATAGACTGAGCTGGGCTTTCAACTTATATGAC

CTCAACAAGGACGGCTGTATCACAAAGGAGGAAATGCTTGACATTATGAAGTCCATCTATGACATGATGGGCAAGTACAC

ATACCCTGCCCTCCGGGAGGAGGCCCCAAGAGAACACGTGGAGAGCTTCTTCCAGAAGATGGACAGGAACAAGGACGGCG

TGGTGACCATCGAGGAATTCATCGAGTCTTGTCAACAGGACGAGAACATCATGAGGTCCATGCAGCTCTCACCCCTTCTC

AACTGATACCTAGTGCTGAGGACACCCCTGGTGTAGGGACCAAGTGGTTCTCCACCTTCTAGTCCCACTCTAGAAACCAC

ATTAGACAGAAGGTCTCCTGCTATGGTGCTTTCCCCATCCCTAATCTCTTAGATTTTCCTCAAGACTCCCTTCTCAGAGA

ACACGCTCTGTCCATGTCCCCAGCTGGCTTCTCAGCCTAGCCTTTGAGGGCCCTGTGGGGAGGCGGGGACAAGAAAGCAG

AAAAGTCTTGGCCCCGAGCCAGTGGTTAGGTCCTAGGAATTGGCTGGAGTGGAGGCCAGAAAGCCTGGGCAGATGATGAG

AGCCCAGCTGGGCTGTCACTGCAGGTTCCGGGGCCTACAGCCCTGGGTCAGCAGAGTATGAGTTCCCAGACTTTCCAGAA

GGTCCTTAGCAATGTCCCAGAAATTCACCGTACACTTCTCAGTGTCTTAGGAGGGCCCGGGATCCAGATGTCTGGTTCAT

CCCTGAATCCTCTCCCTCCTTCTTGCTCGTATGGTGGGAGTGGTGGCCAGGGGAAGATGAGTGGTGTCCCGGATGATGCC

TGTCAAGGTCCCACCTCCCCTCCGGCTGTTCTCATGACAGCTGTTTGGTTCTCCATGACCCCTATCTAGATGTAGAGGCA

TGGAGTGAGTCAGGGATTTCCCGAACTTGAGTTTTACCACTCCTCCTAGTGGCTGCCTTAGGGGAATGGGAAGAACCCAG

TGTGGGGGCACCCATTAGAATCTTTGCCCGGCTCCTCACAATGCCCTAGGGTCCCCTAGGGTACCCGCTCCCTCTGTTTA

GTCTACCCAGAGATGCTCCTGAGCTCACCTAGAGGGTAGGGACGGTAGGCTCCAGGTCCAACCTCTCCAGGTCAGCACCC

TGCCATGCTGCTGCTCCTCATTAACAAACCTGCTTGTCTCCTCCTGCGCCCCTTCTCAGTCAGCCAGGGTCTGAGGGGAA

GGGCCTCCCGTTTCCCCATCCGTCAGACATGGTTGACTGCTTTGCATTTTGGGCTCTTCTATCTATTTTGTAAAATAAGA

CATCAGATCCAATAAAACACACGGCTATGCACAAAAAAAAAAAAAAAAAAAAAAAA

RAT 9QC PROTEIN

MRGQGKKESLSESRDLDGSYDQLTGHPPGPSKKALKQRFLKLLPCCGPQALPSVSENSVEDEFELSTVCHRPEGLEQLQE

QTKFTRRELQVLYRGFKNECPSGIVNEENFKQIYSQFFPQGDSSNYATFLFNAFDTNHDGSVSFEDFVAGLSVILRGTID

DRLSWAFNLYDLNKDGCITKEEMLDIMKSIYDMMGKYTYPALREEAPREHVESFFQKMDRNKDGVVTIEEFIESCQQDEN

IMRSMQLSPLLN

FIGURE 14

RAT 8T (9Q SPLICE VARAIANT) DNA (MAY NOT BE FULL LENGTH. CD: 1-678)

ATGAACCACTGCCCTCGCAGGTGCCGGAGCCCGTTGGGGCAGGCAGCTCGATCTCTCTACCAGTTGGTAACTGGGTCGCT

GTCGCCAGACAGCGTAGAGGATGAGTTTGAATTATCCACGGTGTGTCACCGACCTGAGGGCCTGGAACAACTCCAGGAAC

AGACCAAGTTCACACGCAGAGAGCTGCAGGTCCTGTACCGAGGCTTCAAGAACGAATGCCCCAGTGGGATTGTCAACGAG

GAGAACTTCAAGCAGATTTATTCTCAGTTCTTTCCCCAAGGAGACTCCAGCAACTATGCTACTTTTCTCTTCAATGCCTT

TGACACCAACCACGATGGCTCTGTCAGTTTTGAGGACTTTGTGGCTGGTTTGTCGGTGATTCTTCGGGGGACCATAGATG

ATAGACTGAGCTGGGCTTTCAACTTATATGACCTCAACAAGGACGGCTGTATCACAAAGGAGGAAATGCTTGACATTATG

AAGTCCATCTATGACATGATGGGCAAGTACACATACCCTGCCCTCCGGGAGGAGGCCCCAAGAGAACACGTGGAGAGCTT

CTTCCAGAAGATGGACAGGAACAAGGACGGCGTGGTGACCATCGAGGAATTCATCGAGTCTTGTCAACAGGACGAGAACA

TCATGAGGTCCATGCAGCTCTTTGATAATGTCATCTAGCTCCCCAGGGAGAGGGGTTAGTGTGTCCTAGGGTGACCAGGC

TGTAGTCCTAGTCCAGACGAACCTAACCCTCTCTCTCCAGGCCTGTCCTCATCTTACCTGTACCCTGGGGGCTGTAGGGA

TTCAATATCCTGGGGCTTCAGTAGTCCAGATCCCTGAGCTAAGTCACAAAAGTAGGCAAGAGTAGGCAAGCTAAATCTGG

GGGCTTCCCAACCCCCGACAGCTCTCACCCCTTCTCAACTGATACCTAGTGCTGAGGACACCCCTGGTGTAGGGACCAAG

TGGTTCTCCACCTTCTAGTCCCACTCTAGAAACCACATTAGACAGAAGGTCTCCTGCTATGGTGCTTTCCCCATCCCTAA

TCTCTTAGATTTTCCTCAAGACTCCCTTCTCAGAGAACACGCTCTGTCCATGTCCCAGCTGGCTTCTCAGCCTAGCCTT

TGAGGGCCCTGTGGGGAGGCGGGGACAAGAAAGCAGAAAAGTCTTGGCCCCGAGCTAGTGGTTAGGTCCTAGGAATTGGC

TGGAGTGGAGGCCAGAAAGCCTGGGCAGATGATGAGAGCCCAGCTGGGCTGTCACTGCAGGTTCCAGGGCCTACAGCCCT

GGGTCAGCAGAGTATGAGTTCCCAGACTTTCCAGAAGGTCCTTAGCAATGTCCCAGAAATTCACCATACACTTCTCAGTG

TCCCGGATGATGCCTGTCAAGGTCCCACCTCCCCTCCGGCTGTTCTCATGACAGCTGTTTGGTTCTCCATGACCCCTATC

TAGATGTAGAGGCATGGAGTGAGTCAGGGATTTCCCGAACTTGAGTTTTACCACTCCTCCTAGTGGCTGCCTTAGGGGAA

TGGGAAGAACCCAGTGTGGGGGCACCCATTAGAATCTTTGCCCGGTTCCTCACAATGCCCTAGGGTCCCCTAGGGTACCC

GCTCCCTCTGTTTAGTCTACCCAGAGATGCTCCTGAGCTCACCTAGAGGGTAGGGACGGTAGGCTCCAGGTCCAACCTCT

CCAGGTCAGCACCCTGCCATGCTGCTGCTCCTCATTAACAAACCTGCTTGTCTCCTCCTGCGCCCCTTCTCAGTCAGCCA

GGGTCTGAGGGGAAGGGCCTCCCGTTTCCCCATCCGTCAGACATGGTTGACTGCTTTGCATTTTGGGCTCTTCTATCTAT

TTTGTAAAATAAGACATCAGATCCAATAAAACACACGGCTATGCACAAAAAAAAAAAAAAAAAA

RAT 8T (9Q SPLICE VARAIANT) PROTEIN (MAY NOT BE FULL LENGTH)

MNHCPRRCRSPLGQAARSLYQLVTGSLSPDSVEDEFELSTVCHRPEGLEQLQEQTKFTRRELQVLYRGFKNECPSGIVNE

ENFKQIYSQFFPQGDSSNYATFLFNAFDTNHDGSVSFEDFVAGLSVILRGTIDDRLSWAFNLYDLNKDGCITKEEMLDIM

KSIYDMMGKYTYPALREEAPREHVESFFQKMDRNKDGVVTIEEFIESCQQDENIMRSMQLFDNVI

FIGURE 15

>human KChIP3 cds = 1-7
ATGCAGCCGGCTAAGGAAGTGACAAAGGCGTCGGACGGCAGCCCCTGGGGGACCTCGGGC
ACACACCACTTAGCAAGAA
GGAGGGTATCAAGTGGCAGAGGCCGAGGCTCAGCCGCCAGGCTTTGATGAGATGCTGCCTG
GTCAAGTGGATCCTGTCCA
GCACAGCCCCACAGGGCTCAGATAGCAGCGACAGTGAGCTGGAGCTGTCCACGGTGCGCCA
CCAGCCAGAGGGGCTGGAC
CAGCTGCAGGCCCAGACCAAGTTCACCAAGAAGGAGCTGCAGTCTCTCTACAGGGGCTTTA
AGAATGAGTGTCCCACGGG
CCTGGTGGACGAAGACACCTTCAAACTCATTTACGCGCAGTTCTTCCCTCAGGGAGATGCCA
CCACCTATGCACACTTCC
TCTTCAACGCCTTTGATGCGGACGGGAACGGGGCCATCCACTTTGAGGACTTTGTGGTTGGC
CTCTCCATCCTGCTGCGG
GGCACAGTCCACGAGAAGCTCAAGTGGGCCTTTAATCTCTACGACATTAACAAGGATGGCT
ACATCACCAAAGAGGAGAT
GCTGGCCATCATGAAGTCCATCTATGACATGATGGGCCGCCACACCTACCCCATCCTGCGGG
AGGACGCGCCGGCGGAGC
ACGTGGAGAGGTTCTTCGAGAAAATGGACCGGAACCAGGATGGGGTAGTGACCATTGAAGA
GTTCCTGGAGGCCTGTCAG
AAGGATGAGAACATCATGAGCTCCATGCAGCTGTTTGAGAATGTCATCTAGgacacgtccaaaggagt
gcatggccacag
ccacctccaccccaagaaacctccatcctgccaggagcagcctccaagaaacttttaaaaaatagatttgcaaaaagtg
aacagattgctacacacacacacacacacacacacacacacacacacacacacacagccattcatctgggctggcagaggggac
agagttcagggagggggctgagtctggctaggggccgagtccaggagccccagccagcccttcccaggccagcgaggcgag
gctgcctctgggtgagtggctgacagagcaggtctgcaggccaccagctgctggatgtcaccaagaaggggctcgagtgc
ccctgcagggagggtccaatctccggtgtgagcccacctcgtcccgttctccattctgctttcttgccacacagtgggc
cggccccaggctcccctggtctcctccccgtagccactctctgcccactacctatgcttctagaaagcccctcacctcag
gaccccagagggaccagctgggggcaggggggagaggggctaatggaggccaagcctgcagctttctggaaattcttcc
ctgggggtcccaggatccctgctactccactgacctggaagagctggtaccaggccacccactgtgggcaagcctga
gtggtgagggccactgggccccattctccctccatggcaggaaggcgggggatttcaagtttagggattggtcgtggt
ggagaatctgagggcactctctgccagctccacagggtgggatgagcctctccttgcccagtcctggttcagtgggaat
gcagtgggtgggctgtacacacccctccagcacagactgttccctccaaggtcctcttaggtcccgggaggaacgtggtt
cagagactggcagccagggagcccgggcagagctcagaggagtctgggaagggcgtgtccctcctcttcctgtagtgc
ccctcccatggcccagcagcttggctgagccccctctcctgaagcagtgtcgccgtcccctctgccttgcacaaaaagcac
aagcattccttagcagctcaggcgcagccctagtgggagcccagcacactgcttctcggaggccaggccctcctgctggc
tgaggcttgggcccagtagcccaatatggtggccctgggaagaggccttgggggtctgctctgtgcctgggatcagtg
gggccccaaagcccagcccggctgaccaacattcaaaagcacaaaccctggggactctgcttggctgtcccctccatctg
gggatggagaatgccagcccaaagctggagccaatggtgagggctgagagggctgtggctgggtggtcagcagaaacccc
caggaggagagagatgctgctcccgcctgattggggcctcacccagaaggaacccggtcccaggccgcatggccctcca
ggaacattccacataataacattccatcacagccagcccagctccactcaggcctggccgggggagtccccgtgtgcccc
aagaggctagccccagggtgagcagggccctcagaggaaaggcagtatggcggagccatgggggcccctcggcattcac
acacagcctggcctccctgcggagctgcatggacgcctggctccaggctccaggctgactgggggcctctgcctccagg
agggcatcagctttccctggctcagggatcttctccctccccctcacccgctgcccagcccctccagctggtgctcactctg
cctctaaggccaaggcctcaggagagcatcaccaccacaccccctgccggccttggcctgggggccagactggctgcacag
cccaaccaggaggggtctgcctcccacgctgggacacagaccggccgcatgtctgcatggcagaagcgtctcccttggcc
acggcctgggagggtggttcctgttctcagcatccactaatattcagtcctgtatatttttaataaaataaacttgacaaa
ggaaaaaaaaaaaaaaaaaattcctgcggccgcgttctcca

FIGURE 16

>human KChIP3
MQPAKEVTKASDGSLLGDLGHTPLSKKEGIKWQRPRLSRQALMRCCLVKWILSSTAPQGSDSSD
SELELSTVRHQPEGLD
QLQAQTKFTKKELQSLYRGFKNECPTGLVDEDTFKLIYAQFFPQGDATTYAHFLFNAFDADGNG
AIHFEDFVVGLSILLR
GTVHEKLKWAFNLYDINKDGYITKEEMLAIMKSIYDMMGRHTYPILREDAPAEHVERTFEKMD
RNQDGVVTIEEFLEACQ
KDENIMSSMQLFENVI

FIGURE 16 (cont'd)

RAT P19 DNA (FIRST-PASS, PARTIAL SEQ ID:1-330)
TTTGAGGACTTTGTGGTTGGGCTCTCCATCCTGCTTCGAGGGACCGTCCATGAGAAGCTCAAGTGGGCCTTCAATCTCTA

CGACATCAACAAGGACGGTTACATCACCAAAGAGGAGATGCTGGCCATCATGAAGTCCATCTACGACATGATGGGCCGCC

ACACCTACCCTATCCTGCGGGAGGACGCACCTCTGGAGCATGTGGAGAGGTTCTTCCAGAAAATGGACAGGAACCAGGAT

GGAGTAGTGACTATTGATGAATTTCTGGAGACTTGTCAGAAGGACGAGAACATCATGAGCTCCATGCAGCTGTTTGAGAA

CGTCATCTAGGACATGTAGGAGGGGACCCTGGGTGGCCATGGGTTCTCAACCCAGAGAAGCCTCAATCCTGACAGGAGAA

GCCTCTATGAGAAACATTTTTCTAATATATTTGCAAAAAGTG

RAT P19 PROTEIN (PARTIAL)
FEDFVVGLSILLRGTVHEKLKWAFNLYDINKDGYITKEEMLAIMKSIYDMMGRHTYPILREDAPLEHVERFFQKMDRNQD

GVVTIDEFLETCQKDENIMSSMQLFENVI

FIGURE 17

MOUSE P19 DNA (CD: 49-819)

CGGGCTGCAAAGCGGGAAGATTAGTGACGGTCCCTTTCAGCAGCAGAGATGCAGAGGACCAAGGAAGCCGTGAAGGCATC

AGATGGCAACCTCCTGGGAGATCCTGGGCGCATACCACTGAGCAAGAGGGAAAGCATCAAGTGGCAAAGGCCACGGTTCA

CCCGCCAGGCCCTGATGCGTTGCTGCTTAATCAAGTGGATCCTGTCCAGTGCTGCCCCACAAGGCTCAGACAGCAGTGAC

AGTGAACTGGAGTTATCCACGGTGCGCCATCAGCCAGAGGGCTTGGACCAGCTACAAGCTCAGACCAAGTTCACCAAGAA

GGAGCTGCAGTCCCTTTACCGAGGCTTCAAGAATGAGTGTCCCACAGGCCTGGTGGATGAAGACACCTTCAAACTCATTT

ATTCCCAGTTCTTCCCTCAGGGAGATGCCACCACCTATGCACACTTCCTCTTCAATGCCTTTGATGCTGATGGGAACGGG

GCCATCCACTTTGAGGACTTTGTGGTTGGGCTCTCCATCCTGCTTCGAGGGACGGTCCATGAGAAGCTCAAGTGGGCCTT

CAATCTCTATGACATTAACAAGGATGGTTGCATCACCAAGGAGGAGATGCTGGCCATCATGAAGTCCATCTACGACATGA

TGGGCCGCCACACCTACCCCATCCTGCGGGAGGATGCACCCCTGGAGCATGTGGAGAGGTTCTTTCAGAAAATGGACAGG

AACCAGGATGGAGTGGTGACCATTGATGAATTTCTGGAGACTTGTCAGAAGGATGAGAACATCATGAACTCCATGCAGCT

GTTTGAGAACGTCATCTAGGACATGTGGGAGGGGACCCCAGTGGTCATTGCTTCTCAACCCAGAGAAGCCTCAATCCTGA

CAGGAGAAGCCTCTATGAGAAACATTTTTCTAATATATTTGCAAAAAGTGAGCAGTTTACTTCCAAGACACAGCCACCGT

CACACACAGACACAGACATACAGACACACACACACACACACATGGTTCCTCTGGCTTGGCCAAGGAAGTGGCAGCC

AGAAGGCACCCCCGCCTATTCCTAGGTCAATAAAAAAGGCTGCCTCTGGGATGGCCAGCCCTGGCTAGATGTTACCCACA

AGGAACTCAGAGATCGAGAGGACCAGGTCTACAAAGCTAAGGTCCCTGTGTCTTTTCTACCACTCGGGAGATCAAACTAC

TCCCTCCCTATGGACCCATGCTCTTAGGAAGCTCCCAGAAACTCCAAGGGGACAAAGAGGGGAGAGGTCTATAGGAAGAA

ATGGTTTTGGAAGCTGGGCTTGCAGCCTTATGCTAATGATCACCTGGGGTCCTGGAACCCGAGTGCCAGGCTACCTACTA

TGCCGTGAGCTTAGATAGTGAGGGGCCATTGGACTAAGACCTCCTGTAAGAGTGGGGCAGGATTGAGGTTTTTGGAGAAA

CTGAGGAAACAATTTGTCCATACCACTGGGTGAAGACTGCTGGCCAGTGGGAATGTGGCTGGTGGAGATTTCCCAACTTC

CAGCACCAGGATGGCCTCTCCAAGGTCCTCTTTGATTCCCTGGGGAGATCACCTGGCTCATAGACTGACAACCAGGGAAC

TGGGCTGAAATGGGAGGTCTGGTAGGGGGCATCCCCCTCCTTTTCCCTGGCCACTTGCCACCCAGTTCCTTAACACAGTG

GATCGGCCACACCTCTGTGGCTGCCCTTGAACAGACTCATCCCGACCAAGACAAAAAAGCACAAACTCCTAGCAGCTCAG

GCCAAGCCCACAAGGGAAGGCCTGGGTCCCTGCAGCCCTGATTCAGTGGCCGAGGAAGACGCTCAGACATCCATCCTGTA

CCTCGGAGCCTTGGGGGTCTCACAGCCCTTTCCCAGCCCAGCTCGCCAACATTCTAAAGCACAAACCTGCGGATTCTGCT

TGCTTGGGCTGCGCCCTGGGGATTGAAGGCCACTGTTAACCCTAAGCTGGAGCTAGCCCTGAGGGCTGGGGACCTGTGAC

CAGGCAACAGGTCAGCAGACCCTCAGGAGGAGAGAGAGCTGTTCCTGCCTCCCCAGGCCTCGCCCAGAAGGAACAGTGTC

CCAAGAAGCATGTTTCCTGGAGGAACATCCCCACAAAAGTACATTCCATCATCTGAAGCCCGGTCTCTGCTCAGGCCTGC

CTCTGAAAGTCCACGTGTGTTCCCCAGAAGGCCAGCCCCAAGATAAGGGAGGTCCTTAGAGGAAGGACAGGGTGACAACA

CCCCTATACACAGGTGGACCCCCCCTCTGAGGACTGTACTGACCCCATCTCCATCCTGACCGGGGCCTTCCTTTACCCGA

TCTACAGACCACCAGTTCTCCCTGGCTCAGGGACCCCCTGTCCCCCAGTCTGACTCTTCCCATCGAGGTCCCTGTCTTGT

GAAAAGCCAAGGCCACGGGAAAAGGCCACCACTCTAACCTGCTGCATCCCTTAGCCTCTGGCTGCACGCCCAACCTGGAG

GGGTCTGTCCCCTTTGCAGGGACACAGACTGGCCGCATGTCCGCATGGCAGAAGCGTCTCCCTTGGGTGCAGCCTGGAAG

GGTGGTTTCTGTCTCAGCGCCCACCAATATTCAGTCCTATATATTTTAATAAAAGAAACTTGACAAAGGAAAAAAAAAAA

AAAA

FIGURE 18

>AI 352454 (partial) cds = 1-339
CACGAGGTGGAAAGCATTTCGGCTCAGCTGGAGGAGGCCAGCTCTACAGGCGGTTTCCTGT
ACGCTCAGAACAGCACCAA
GCGCAGCATTAAAGAGCGGCTCATGAAGCTCTTGCCCTGCTCAGCTGCCAAAACGTCGTCTC
CTGCTATTCAAAACAGCG
TGGAAGATGAACTGGAGATGGCCACCGTCAGGCATCGCCCCGAAGCCCTTGAGCTTCTGGA
AGCCCAGAGCAAATTTACC
AAGAAAGAGCTTCAGATCCTTTACAGAGGATTTAAGAACGTAAGAACTTTCTTTTTGACTTT
ACCTTCACACAATTCCCA
GAGGAGCATTGAGAAATGAgaggaaaaggggaaaatatcccattctatgagaagccccatcatatgtatatttcatact
gatccttcccagataggaatataatcagtatctgtggactttgaatctctgtggcacacccatgctggcatactgtaatt
gcccattaaacaaanagtttttgagaaaaaaaaaaaaaaaaaaaaaaaa

>AI352454
HEVESISAQLEEASSTGGFLYAQNSTKRSIKERLMKLLPCSAAKTSSPAIQNSVEDELEMATVRHR
PEALELLEAQSKFT
KKELQILYRGFKNVRTFFLTLPSHNSQRSIEK

FIGURE 19

P193 (AAJ49365) DNA (CD: 2-127, partial)

TGAAAGGTTCTTCGAGAAAATGGACCGGAACCAGGATGGGGTAGTGACCATTGAAGAGTTCCTGGAGGC
CTGTCAGAAGGATGAGAACATCATGAGCTCCATGCAGCTGTTTGAGAATGTCATCTAGGACACGTCCAAA
GGAGTGCATGGCCACAGCCACCTCCACCCCCAAGAAACCTCCATCCTGCCAGGAGCAGCCTCCAAGAAA
CTTTTAAAAAATAGATTTGCAAAAAGTGAACAGATTGCTACACACACACACACACACACACACACACAC
ACACACACACAGCCATTCATCTGGGCTGGCAGAGGGGACAGAGTTCAGGGAGGGGCTGAGTCTGGCTAG
GGGCCGAGTCCAGGAGCCCCAGCCAGCCCTTCCCAGGCCAGCGAGGCGAGGCTGCCTCTGGGTGAGTGG
CTGACAGAGCAGGTCTGCAGGCCACCAGCTGCTGGATGTCACCAAGAAGGGGCTCGAGTGCCCCTGCAG
GGGAGGGTCCAATCTCCGGTGTGAGCCCACCTCGTCCCGTTCTCCATTCTGCTTTCTTGCCACACAGTGGG
CCGGCCCCAGGCTCCCCTGGTCTCCTCCCCGTAGCCACTCTCTCGCCCACTACCTATGCTTCTAGAAAGCCC
CTCACCTCAGGACCCCAGAGGGACCAGCTGGGGGGCAGGGGGGAGAGGGGGTAATGGAGGCCAAGCCT
GCAGCTTTCTGGAAATTCTTCCCTGGGGGTCCCAGGATCCCCTGCTACTCCACTGACCTGGAAGAGCTGG
GTACCAGGCCACCCACTGTGGGGCAAGCCTGAGTGGTGAGGGGCCACTGGGCCCCATTCTCCCTCCATGG
CAGGAAGGCGGGGGATTTCAAGTTTAGGGATTGGGTCGTGGTGGAGAATCTGAGGGCACTCTCTGCCAG
CTCCACAGGGTGGGATGAGCCTCTCCTTGCCCCAGTCCTGGTTCAGTGGGAATGCAGTGGGTGGGGCTGT
ACACACCCTCCAGCACAGACTGTTCCCTCCAAGGTCCTCTTAGGTCCCGGGAGGAACGTGGTTCAGAGAC
TGGCAGCCAGGGAGCCCGGGGCAGAGCTCAGAGGAGTCTGGGAAGGGGCGTGTCCCTCCTCTTCCTGTA
GTGCCCCTCCCATGGCCCAGCAGCTTGGCTGAGCCCCCTCTCCTGAAGCAGTGTCGCCGTCCCTCTGCCTT
GCACAAAAAGCACAAGCATTCCTTAGCAGCTCAGGCGCAGCCCTAGTGGGAGCCCAGCACACTGCTTCT
CGGAGGCCAGGCCCTCCTGCTGGCTGAGGCTTGGGCCCAGTAGCCCCAATATGGTGGCCCTGGGGAAGA
GGCCTTGGGGGTCTGCTCTGTGCCTGGGATCAGTGGGGCCCCAAAGCCCAGCCCGGCTGACCAACATTCA
AAAGCACAAACCCTGGGGACTCTGCTTGGCTGTCCCCTCCATCTGGGGATGGAGAATGCCAGCCCAAAG
CTGGAGCCAATGGTGAGGGCTGAGAGGGCTGTGGCTGGGTGGTCAGCAGAAACCCCCAGGAGGAGAGA
GATGCTGCTCCCGCCTGATTGGGGCCTCACCCAGAAGGAACCCGGTCCCAGGCCGCATGGCCCCTCCAGG
AACATTCCCACATAATACATTCCATCACAGCCAGCCCAGCTCCACTCAGGGCTGGCCCGGGGAGTCCCCG
TGTGCCCCAAGAGGCTAGCCCCAGGGTGAGCAGGGCCCTCAGAGGAAAGGCAGTATGGCGGAGGCCATG
GGGGCCCCTCGGCATTCACACACAGCCTGGCCTCCCCTGCGGAGCTGCATGGACGCCTGGCTCCAGGCTC
CAGGCTGACTGGGGGCCTCTGCCTCCAGGAGGGCATCAGCTTTCCCTGGCTCAGGGATCTTCTCCCTCCC
CTCACCCGCTGCCCAGCCCTCCCAGCTGGTGTCACTCTGCCTCTAAGGCCAAGGCCTCAGGAGAGCATCA
CCACCACACCCCTGCCGGCCTTGGCCTTGGGGCCAGACTGGCTGCACAGCCCAACCAGGAGGGGTCTGC
CTCCCACGCTGGGACACAGACCGGCCGCATGTCTGCATGGCAGAAGCGTCTCCCTTGGCCACGGCCTGGG
AGGGTGGTTCCTGTTCTCAGCATCCACTAATATTCAGTCCTGTATATTTTAATAAAATAAACTTGACAAAG
GAAAAAAAAAAAAAAAAA

P193 PROTEIN (PARTIAL)

ERFFEKMDRNQDGVVTIEEFLEACQKDENIMSSMQLFENVI

FIGURE 20

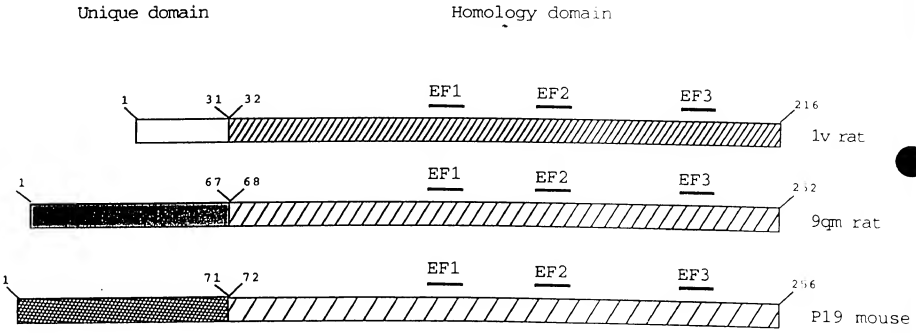


Diagram to indicate homology and uniqueness among rat 1v, rat 9qm, and mouse p19 proteins.
Numbers: amino acid positions.

The C-terminal 185 amino acids are conserved (hatched lines). The homologies among the homology domains are:
rat 1v vs rat 9q: 74%
rat 1v vs mouse P19: 71%
rat 9q vs mouse P19: 75%

The N-termini are distinct (open and shaded boxes).

The putative calcium-binding EF-hand motifs conserved in all are represented as solid bars

FIGURE 21

Human 9q genomic DNA sequences:

A. exon1 sequence (with introns included):

CGGGACCACAGCCCACCTCCCCTCCCCCTCACCTCCGCTCTGCCTCCGGCTCTGCCTCACCTGCTGCCT
AGTGTTCCCTCTCCTGCTCCAGGACCTCCGGGTAGACCTCAGACCCCGGGCCCATTCCCAGACTCAGCCTCAGCCCG
GACTTCCCCAGCCCCGACAGCACAGTAGGCCGCCAGGGGGCGCCCGTGTGAGCGCCCTATCCCGGCCACCCGGCGCCC
CCTCCCACGGCCCGGGCGGGAGCGGGGCGCCGGGGGCCATGCGGGGCCAGGGCCGCAAGGAGAGTTTGTCCGATTCC
CGAGACCTGGACGGCTCCTACGACCAGCTCACGGGTGAGTCAGTGACGTGGGGGTCGCGGGAGGGAGGGTGGATTCC
ATTCCTCCAGACCCTTCCGCCTCTCCGACCCCGGCCTGGCCCGCACCAACACTCTGCCCCATTCCCAGGCACTCTTA
TGGCCGGTCTGGGCGGCAGGACACTGGGGGTTCAAAGCCTTGGGTCCCGCAGGGGTTGGGGAGGAACAGAAGAGGCA
GGTGTGGAGAGGCAGCAGGTGTGGGCGTATGTGACACAGGGCTGAGAGGGTGTCTGGAGTGGGAGGTGTTACCGTGC
GTGAGCACCTGTCATTCTGTGTGTGTGTGTGTGTGCGCGCGCACCTCCCACAGCTGGTTGCCATGTGCCCTGGGC
TTGGTGACAGCTAGGGTGAGTGTGATTGTATGTGGCAGTGCAATTGTATGGTCTCGTCAGATGTTTGAGTTTGCGTA
GGACCCTGGTTGTACTGATGAAGTTGTTTTGACCATGTGTCTYTATGTGCAACGATGTGTTGTGAGTGTGTAATTCT
GTATGAAAGTGGTGTGTAACTACCAGAATGTGTCAGGGCTCTACTTTAGGGTGGCTTGTCTCTTTG

B. Exon 2-11 sequence (with introns included):

AGCCNANTGGGTCNCCATGTGTATGCATCCTGTTTACTTAGGTCACATTTGTATATGTTGTGTAAGGAGTACCAGGT
CAATGTGTGTGTGTGTGTGAGCATGNATAAACGCCANCAGGTGTGAGTTANTGAATATCAAGCTGTCACTGGCACCC
ATCACTGTGATGTATTGTTCATACATGTCACNAACACGGCCTGTCACTGTAGGTGTGTGTATRAGAGAGGTGTTCTT
ACCCAGGCAATCCTTGGGTTGGACATCATCNTGAGAGGTCCAGCCATGGCACTTGAGCCAAGGGTACTAGGTCAGCA
AAGACATTGAGGCCACTGCCACCTCATCCTTGCCGCCTCGCTGTCACCGGCCACGTCCCATTAAACCAAGTGCNTGA
GCCTCACCTCTATGGACTCACTGGGCTCCCCTAACCCGATTCCAACCACCCTTGCCATTCCTTTCCTCCCCTTAATT
CCTCCCCCAGCCCGGTCCCCAGATGGGGTTGATTTGTGACTGGCGGGAGGGGACAGGGAACAGAGGGACCCCGGGA
GTTAATGTGCCTTCCTGGGGTCTTCTCTCTTCNCAGGCCACCCTCCAGGGCCCACTAAAAAAGCGCTGAAGCAGCGA
TTCCTCAAGCTGCTGCCGAGCTGCGGGCCCCAAGCCCTGCCCTCAGTCAGTGAAAGCAAGTGCCTCTCATGTGCTTC
CCGGGGCGGGGCTCGATGTGTGCGTGCGTGTCTGTGCATGANTGTGTGCGCGTGTGCCCCAGGCCTGCRAGTGTKCS
CATGYTCCAGGCTTGCATCTGTGGGGGGGCGTGCCCCAAGCCTKSGTGTTTGGGGGTGGGGCCTGCCCCAVGCCTGT
GCGTGTGTATGTGTGTGCATGTGCGCRCGAGCGTRCCCCAGACCGGCGTGTGTGTGTGGGGGCGTGCCCTACCCC
TGCATGTGTGTGGAGGGCGTGCCCCAKGCCCKCGGCGNGTTGTTTGTTGTATGGGAAGGCGTACCGCACGCCTGC
GTGTGGGGGAGGGGCGTGCCCCAGAGCCTGCGTGCGTGTGTGTGTGTGTGTGTGTGTGGGCGTGACCAGCG
TGGCGAGGGCGGGTGCTGGCAAGGCTGGAGCATAAGNGGGCGNGGCTACATGTGTGNGTGTACGNCTGAAGCCAGCG
TGTGTGGCGTGGTCAGTTGGNAGCGGGTGTGTGTCACCGCTCCCGCAAAACTGTGGGACCCGAGAGTGTGGGTGTG
ACCATTGTGACCAGGNTGAGGCCTGAGCCTGTGTAGCTGTGGCGGCCTGTGTAGACCAGGCGGCCGTGAGGGTCTGT
ATGTGGCTTAGCTGGGTTAGTGTCTTCAACTCCGTGCGGCCGCCCCTTCCCCACCGTGTTTTGGACCCCTGATGTG
TGTTGCCTATGCCCCGACAGGATGGTGACAGGTGTAGAGGATGGCGCCTGCCCTCCTCCAGACGCCAGGGTATTTGG
GTTTTCTGTGCCAGCCTGGTCCCCTGCTGAAGTGATCTCCAGTTGAGTGACCTCGCTTTGTCTCTAGGTCTCCATTT
CCTCAGTTGGGCCTTGCCCACCTCATAGGATCATACTGCATTTTGCAAACCATAAAGGCCCGCTTTGTAGTTATTTG
AGCATGCTGTTGTGTTGGACTTAGATGGGTCCCACACGGGGGTGGATTCGGARAAGGACAGGCGTGAGTCCCGCAAG
CTTGTGTGCATGGGGTCCGTTTCGTGTGTGTCTGTGCTGGTTGGGTGTGCCTTTGCACGGGCTGGGTTGTCAGGTTT
GCTCTGAGTGTGAGGGGCCAGGTGTGTGTATGCAGTTGGCCGGGTCTTCCGCTTTCTCGGTGWCAGTTCGCTCCCTT
CAGCATTAGCCGCCCCAGCCTCCCTCCGCCCCCACAGACCCCGCCTGCTGGACCCAGGTGACTTACGCTCCTGGTGG
GGGCGGGGCGGGGCAGGGCGGCTTTGCCATCTTGGGGTGGGGGGCACTTGCCTGGGGGCTGGACGTTGGGGGCGGGG
CAGGATTGAGATGGGGCCGGGGGTGGGGTCTGGATGGAGGTTGGCTGAGCTGGGCGGGGCATGGCTCAGGCATGGCT
GGGATAGATGGGGCTGGGCGGGGCGAGGGGAGGGGCTGGGTGGGACGAGGGGAGGGTTTGGGCGGGGCAAGGCTGGG
GCTGGGCGGATCTGAGTTGGTCCCCGAAGGCCCGGAGCTCTGACCCTCAGACGCCCCCTCTTGAACTGGCTTTTCCC
ACTCCTCCCTTTCTAAAACGAAGATGCGGCTGGGGGCCTTCCCCTCCAACGAGGGATCGAGGGCCGCGGGGCGAGCA
CTGAGTCGGATCCCTGGCTCTGGGGCCAGGCCAGGCCTTGGCCCGCTGATAGACCTCGAAGATGGCCATCATCTTTT
CTCCTTACCTCAGTGTCCTTGGCTCGGGCCCAGGGAACTGGCAGCCTGGTCTCCGGCATCGGATGGGACCGGGGGG
CGGGGAGGGGGTGAATGGGGCAGTGATTTGAAGAGGGGTCGCGGAGGCTGGGCATGAGGCGCGGCTGTCCTCACCGC
TCCCGCAGACAGCGTGGACGATGAATTTGAATTGTCCACCGTGTGTCACCGGCCTGAGGGTCTGGAGCAGCTGCAGG
AGCAAACCAAATTCACGCGCAAGGAGTTGCAGGTCCTGTACCGGGGCTTCAAGAACGTGAGTGCNGGGCGAGGCCAA

FIGURE 22

ACTCAGCGNGGGTGGGACAGGAGGACCCAANCCGGTCCANATTTTTCCCANAAAGCATGGCTTNGATGCTTGAGGNG
CGGGCGGAAGGGAGGCAAGGCCCTGAGACTGAACTTCTAGCTGGAGGTTCTGGGGCGGGGCCAGAACGRAAGTGGCG
CCTGTAGACTGTCAGTTTCGTTCCATGTTTTTTATTTGTGCACTGGGAAAAGAAGTCTTCCCTCCCATCACATGAGCC
ACGTGGTGAGTCCTCTGGAGGCTTGAAGATTATCCCCCTCCCTGGGAGTCTTGGGCCATGGAGGGTGGGGGCGGTGA
ACGGAAGGGGATTTTGTCTCTGCCCTCAGCCTGGTGCCCTCTCCTTCCAGGAATGTCCCAGCGGAATTGTCAATGAG
GAGAACTTCAAGCAGATTTACTCCCAGTTCTTTCCTCAAGGAGGTGAGGGGACAAGGCCCAAGGGGAAGCAGTTGTC
CTTCTCTAGGCTGAGGGAGGGAGGGATTCTGGAGGAGCTGGGAATGCCAAGGTGATGGGGGGTATGGGGAGCTCCTT
AGAGGGAGGAAGTCCTCTCCTGTGTGGAAGCCAACTTCTCCACACTCACCCTGCAGACTCCAGCACCTATGCCACTT
TTCTCTTCAATGCCTTTGACACCAACCATGATGGCTCGGTCAGTTTTGAGGTGAGCTGGGCGAGGTGGGCCAGGGAA
GCCTGTTTCCTGGAGTTCAGGGCCAGGATCTCCAGGCCAAACCCAGAGAAGGAGTTGGGTGAAGAGKACCCGAGGAC
ACAGCTCCCTNCTGCCTTCTTCCCAGGACTTTGTGGCTGGTTTGYCCGTGATTCTTCGGGGAACTGTAGATGACAGG
CTTAATTGGGCCTTCAACCTGTATGACCTTAACAAGGACGGCTGCATCACCAAGGAGGTGCAGGGCAACTGAAGGGC
TGGGGGTCTGTGGCGGTGATGGGGGTGGCGTGCAKAGGGTGATGGGAGGGAAATATGACCCACATATGCCCACAAGC
AATGGGATCAAGGGAGGCTGGAGGCTCTGAGGAAGGATCCCTCTTCTCTCTTGGCCTAACAGGAAATGCTTGACATCA
TGAAGTCCATCTATGACATGATGGGCAAGTACACGTACCCTGCACTCCGGGAGGAGGCCCCAAGGGAACACGTGGAG
AGCTTCTTCCAGGTACTTGGGAGTGGGTATGGCTGGAGGGCCCTGGAGTGAAGGGAAGAAGGCCAAGAACCAGCAGG
GAACTCACCTGACTTCTGTCTGCCTCTCTCTTGCCATCCCCTCCTGTTCTCCCTGCCTGACCACCTTCTTGCAGAAGA
TGGACAGAAACAAGGATGGTGTGGTGACCATTGAGGAATTCATTGAGTCTTGTCAAAAGGTACAGCTCCCTGCCCTC
TACATTACCCTGACCTGGACTCAGGCCTGATTTAGTAATGCAGGGAAAAGCTTCTTTGGGAAGAATACCACCTTCCC
ACCTCACCCCCATATTTCAATCCTATTCCTTTGTGGGAGGCTTACCCCTTCCCTACCTCAGGTCTCTCTGGGCATCT
CCTTCCTCTGTGCTTTTGAATGTCCCCGTCTGTGACTCAAGTGTCCCTCTCACTGTCTCTGATAAAGCTCCTTCTCT
TTCTCTCTCTTCAATCTGCCTCGCTCACATCATGGCCACAGGATGAGAACATCATGAGGTCCATGCAGCTCTTTGAC
AATGTCATCTAGCCCCCAGGAGAGGGGGTCAGTGTTTCCTGGGGGGACCATGCTCTAACCCTAGTCCAGGCGGACCT
CACCCTTCTCTTCCCAGGTCTATCCTCATCCTACGCCTCCCTGGGGGCTGGAGGGATCCAAGAGCTTGGGGATTCAG
TAGTCCAGATCTCTGGAGCTGAAGGGGCCAGAGAGTGGGCAGAGTGCATCTCGGGGGGTGTTCCCAACTCCCACCAG
CTCTCACCCCCTTCCTGCCTGACACCCAGTGTTGAGAGTGCCCCTCCTGTAGGAATTGAGCGGTTCCCCACCTCCTA
CCCCTACTCTAGAAACACACTAGACAGATGTCTCCTGCTATGGTGCTTCCCCCATCCCTGACCTCATAAACATTTCC
CCTAAGACTCCCCTCTCAGAGAGAATGCTCCATTCTTGGCACTGGCTGGCTTCTCAGACCAGCCATTGAGAGCCCTG
TGGGAGGGGGACAAGAATGTATAGGGAGAAATCTTGGGCCTGAGTCAATGGATAGGTCCTAGRAGGTGGCTGGGGTT
GAGAATAGAAGGGCCTGGACAGATTATGATTGCTCAGGCATACCAGGTTATAGCTCCAAGTTCCACAGGTCTGCTAC
CACAGGCCATCAAAATATAAGTTTCCAGGCTTTGCAGAAGACCTTGTCTCCTTAGAAATGCCCCAGAAATTTTCCAC
ACCCTCCTCGGTATCCATGGAGAGCCTGGGGCCAGATATCTGGCTCATCTCTGGCATTGCTTCCTCTCCTTCTTTCC
TGCATGTGTTGGTGGTGGTTGTGGTGGGGGAATGTGGATGGGGGATGTCCTGGCTGATGCCTGCCAAAATTTCATCC
CACCCTCCTTGCTTATCGTCCCTGTTTTGAGGGCTATGACTTGAGTTTTTGTTTCCCATGTTCTCTATAGACTTGGG
ACCTTCCTGAACTTGGGGCCTATCACTCCCCACAGTGGATGCCTTAGAAGGGAGAGGGAAGGAGGGAGGCAGGCATA
GCATCTGAACCCAGTGTGGGGGCATTCACTAGAATCTTCAATCAACCTGGGCTCTCCCCACCCCACCCCAGATAACC
TCCTCAGKTCCCTAGGGTCTCTTCTYGCTTGACTCAATCTACCCAGAGATGCCCCTTAGCACACCTAGAGGGCAGGG
ACCATAGGACCCAGGTTCCAACCCCATTGTCAGCACCCCAGCCATGCGGCCACCCCTTAGCACACCTGCTCGTCCCA
TTTAGCTTACCCTCCCAGTTGGCCAGAATCTGAGGGGAGAGCCCCCAGAGAGCCCCTTCCCCATCAGAAGACTGTT
GACTGCTTTGCATTTTGGGCTCTTCTATATATTTTGTAAAGTAAGAAATATACCAGATC:TAATAAAACACAATGGC
TATGCACAGGCTGCCGTCTCTGCCTTTTGTCCCTCCCACCTACAAATACTACACAACCCCTAACGAATGCACCTGCA
GCCTTTTAGATCCCCAAGAAAGTGGCTTTCTTTTCCATAGTTGGCCATACCTTGGCATGAGACTGAGACACAGGCTC
TGGAATGGTTGGAAACCCACCCAACCTCAGGCCCCCACATGAATCTCCCTCCCACACAGCCTGAGAGGAGACAAGGA
AGGAAGGACAGGACACTGATGTCCCGAAGACTGTGCCAAGCAAGCTGTTTTTAGCTGACATTCTTACAAGTTGAAT
CACAGATTTCTAATTTACAGACTTTTTAGTTAATCTCAAAGTGCTTTCTTTTGAGGGGCCTCCTTTAAGTTCYTTCT
TTTTTTTTTTTTTT

FIGURE 22 (cont'd)

>monkey KChIP4 cds = 265 [redacted]
gtcgacccacgcgtccggtgcgctgtgg[redacted]gcccgccagccaaatgccaggatcag[redacted]gaggctgg
actttagtccaggtctgtcctcaccccgggggaccgccggctttgcagggtgcagctgcgaggaactgctcactttttc
ccctgcaagtctttgttccaagcctgacgttgctacgattctgtaattaactccctccactccaaaggggtctggaggc
tgggatgctctgccagctcagaggATGTTGACTCTGGAGTGGGAGTCCGAAGGACTGCAAACAGTGGGTA
TTGTTGTGAT
TATATGTGCATCTCTGAAGCTGCTTCATTTGCTGGGACTGATTGATTTTTCGGAAGACAGCGT
GGAAGATGAACTGGAGA
TGGCCACTGTCAGGCATCGGCCTGAGGCCCTTGAGCTTCTGGAAGCCCAGAGCAAATTTACC
AAGAAAGAGCTTCAGATC
CTTTACAGAGGATTTAAGAACGAATGCCCCAGTGGTGTTGTTAATGAAGAAACCTTCAAAGA
GATTTACTCGCAGTTCTT
TCCACAGGGAGACTCTACAACATATGCACATTTTCTGTTCAATGCGTTTGATACGGACCACA
ATGGAGCTGTGAGTTTCG
AGGATTTCATCAAAGGTCTTTCCATTTTGCTCCGGGGGACAGTACAAGAAAAACTCAATTGG
GCATTTAATCTGTATGAT
ATAAATAAAGATGGCTACATCACTAAAGAGGAAATGCTTGATATAATGAAAGCAATATACG
ACATGATGGGTAAATGTAC
ATATCCTGTCCTCAAAGAAGATGCACCCAGACAACACGTCGAAACATTTTTTCAGAAAATGG
ACAAAAATAAAGATGGGG
TTGTTACCATAGATGAGTTCATTGAAAGCTGCCAAAAAGATGAAAACATAATGCGCTCCATG
CAGCTCTTTGAAAATGTG
ATTTAActtgtcaactagatcctgaatccaacagacaaatgtgaactattctaccaccctaaagtcggagctaccactt
ttagcatagattgctcagcttgacactgaagcatattatgcaaacaagctttgttttaatataaagcaatccccaaaaga
tttgagtttctcagttataaatttgcatcctttccataatgccactgagttcatgggatgttctaactcatttcatactc
tgtgaatattcaaaagtaatagaatctggcatatagttttattgattcctagccatgggattattgaggctttccacata
tcagtgattttaaaatacccagtgtttttgctctcatttgtatgtattcagtcctaggatttgaatggttttctaatat
actgacatctgcatttaatttccagaaattaaattaattttcatgtctgaatgctgtaattccatttatatactttaagt
aaacaaataagattactacaattaaacacatagttccagtttctatggcctttccctttcccaccttctattataaattaat
tttatctggtatttttaaacatttaaaaatttatcatcagatatcagcatatgcctaattatgcctaatgaaacttaata
agcatttaattttccatcatacattatagccaaggcctatatactatatataattttggatttgtttaatcttacaggct
gttttccattgtatcatcaagtggaagttcaagacggcatcaaacaaaacaaggatgtttacagacatatgcaaagggtc
aggatatctatcctccagtatatgttaatgcttaataacaagtaatcctaacagcattaaaggccaaatctgtcctcttt
ccccctgacttcctacagcatgtttatatttacaagccattcagggacaaagaaacctgactaccccactgtctactagg
aacaaacaaacagcaagcaaaattcactttgaaagcaccagtggttccattacattgacaactactaccaagattcagta
gaaaataagtgctcaacaactaatccagattacaatatgatttagtgcatcataaaattccaacaattcagattatttt
aatcatctcagccacaactgtaaagttgccacattactaaagacacacacatcgtccctgttttgtagaaatatcacaaa
gaccaagaggctacagaaggaggaaatttgcaactgtctttgcaacaataaatcaggtatctattctggtgtagagatag
gatgttgaaagctgccctgctatcaccagtgtagaaattaagagtagtacaatacatgtacactgaaatttgccatcgcg
tgtttgtgtaaactcaatgtgcacattttgtatttcaaaaagaaaaaataaaagcaaaataaaatgttwawaamwmwaaa
aaaaaaaaaaaaa

>monkey KChIP4
MLTLEWESEGLQTVGIVVIICASLKLLHLLGLIDFSEDSVEDELEMATVRHRPEALELLEAQSKFT
KKELQILYRGFKNE
CPSGVVNEETFKEIYSQFFPQGDSTTYAHFLFNAFDTDHNGAVSFEDFIKGLSILLRGTVQEKLNW
AFNLYDINKDGYIT
KEEMLDIMKAIYDMMGKCTYPVLKEDAPRQHVETFFQKMDKNKDGVVTIDEFIESCQKDENIM
RSMQLFENVI

FIGURE 23

>monkey KChIP4 C terminal splice variant cds = 265-966

gtcgacccacgcgtccggtgcgctgtggttgcgggggggagccccgccagccaaatgccaggatcagcatgagaggctgg
actttagtccaggtctgtcctcaccccgggggacccgccggctttgcagggtgcagctgcgaggaactgctcactttttc
ccctgcaagtctttgttccaagcctgacgttgctacgattctgtaattaactccctccactccaaagggggctggaggc
tgggatgctctgccaactcagaggATGTTGACTCTGGAGTGGGAGTCCGAAGGACTGCAAACAGTGGGTA
TTGTTGTGAT
TATATGTGCATCTCTGAAGCTGCTTCATTTGCTGGGACTGATTGATTTTTCGGAAGACAGCGT
GGAAGATGAACTGGAGA
TGGCCACTGTCAGGCATCGGCCTGAGGCCCTTGAGCTTCTGGAAGCCCAGAGCAAATTTACC
AAGAAAGAGCTTCAGATC
CTTTACAGAGGATTTAAGAACGAATGCCCCAGTGGTGTTGTTAATGAAGAAACCTTCAAAGA
GATTTACTCGCAGTTCTT
TCCACAGGGAGACTCTACAACATATGCACATTTTCTGTTCAATGCGTTTGATACGGACCACA
ATGGAGCTGTGAGTTTCG
AGGATTTCATCAAAGGTCTTTCCATTTTGCTCCGGGGGACAGTACAAGAAAAACTCAATTGG
GCATTTAATCTGTATGAT
ATAAATAAAGATGGCTACATCACTAAAGAGGAAATGCTTGATATAATGAAAGCAATATACG
ACATGATGGGTAAATGTAC
ATATCCTGTCCTCAAAGAAGATGCACCCAGACAACACGTCGAAACATTTTTTCAGGCTGTTT
TCCATTGTATCATCAAGT
GGAAGTTCAAGACGGCATCAAACAAAACAAGGATGTTTACAGACATATGCAAAGGGTCAGG
ATATCTATCCTCCAGTATA
TGTTAAtgcttaataacaagtaatcctaacagcattaaaggccaaatctgtcctctttcccctgacttccttacagcatg
tttatattacaagccattcagggacaaagaaaccttgactacccctactgtctactaggagacaaacaaacagcaagcaaaa
ttcactttgaaagcaccagtggttccattacattgacaactactaccaagattcagtagaaaataagtgctcaacaacta
atccagattacaatatgatttagtgcatcataaaattccaacaattcagattatttttaatcatctcagccacaactgta
aagttgccacattactaaagacacacacatcgtccctgttttgtagaaatatcacaaagaccaagaggctacagaaggag
gaaatttgcaactgtctttgcaacaataaatcaggtatctattctggtgtagagatagggatgttgaaagctgccctgcta
tcaccagtgtagaaattaagagtagtacaatacatgtacactgaaatttgccatcgcgtgtttgtgtaaactcaatgtgc
acattttgtatttcaaaaagaaaaaataaaagcaaaataaaatgttwawaamwmwaaaaaaaaaaaaaaaa

>monkey KChIP4 C terminal splice variant

MLTLEWESEGLQTVGIVVIICASLKLLHLLGLIDFSEDSVEDELEMATVRHRPEALELLEAQSKFT
KKELQILYRGFKNE
CPSGVVNEETFKEIYSQFFPQGDSTTYAHFLFNAFDTDHNGAVSFEDFIKGLSILLRGTVQEKLNW
AFNLYDINKDGYIT
KEEMLDIMKAIYDMMGKCTYPVLKEDAPRQHVETFFQAVFHCIIKWKFKTASNKTRMFTDICK
GSGYLSSSIC

FIGURE 24

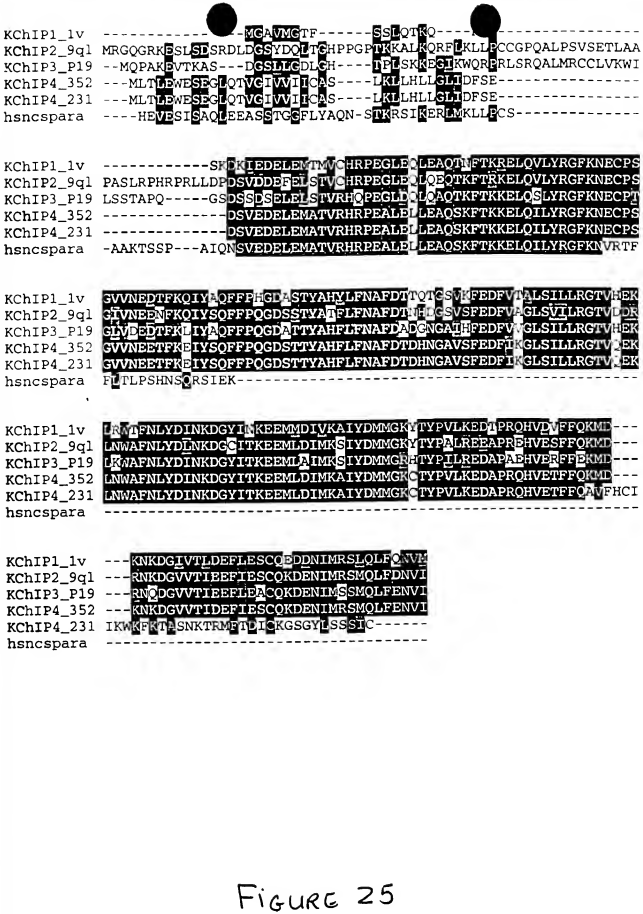

KChIP1_1v
KChIP2_9ql
KChIP3_P19
KChIP4_352
KChIP4_231
hsncspara

FIGURE 25

Rat 33b07 protein

MNGVEGNNELPLANTSTSALVPEDLDLKQDQPLSEETDTVREMEAAGEAGAEGGASPDSEHCEPQLCLPVAENGCAAAAG
EGLEDGLSSSKCGDAPLASVAANDSNKNGCQLAGPLSPAKPKTLEASGAVGLGSQMMFGPKKTKVMTTKGAISATTGKEG
EAGAAMQEKKGVQKEKKAAGGGKDETRPRAPKINNCMDSLEAIDQELSNVNAQADRAFLQLERKFGRMRRLHMQRRSFII
QNIPGFWVTAFRNHPQLSPMISGQDEDMMRYMINLEVEELKHPRAGCKFKFIFQSNPYFRNEGLVKEYERRSSGRVVSLS
TPIRWHRGQFPQAHIHRNREGNTIPSFFNWFSDHSLLEFDRIAEIIKGELWSNPLQYYLMGDGERRGVRVPPRQPVESPR
SFRFQSG.

Rat 33b07 DNA (coding: 85-1308)

GGTGGAGCTAAGCACTCACTGCGGTGCTGCCCTGCGTCTGCAGAGAACAAGGAAAGCTTCTCTGCAGGGCTGTCAGCTGC
CAAAATGAACGGCGTGGAAGGGAACAACGAGCTCCCTCTCGCTAACACCTCGACCTCCGCCCTTGTCCCGGAAGATCTGG
ATCTGAAGCAAGACCAGCCGCTCAGCGAGGAAACTGACACGGTGCGGGAGATGGAGGCTGCAGGTGAGGCCGGTGCGGAG
GGAGGCGCGTCCCCCGATTCGGAGCACTGCGACCCCCAGCTCTGCCTCCGAGTGGCTGAGAATGGCTGTGCTGCCGCAGC
GGGAGAGGGGCTGGAGGATGGTCTGTCTTCATCAAAGTGTGGGGACGCACCCTTGGCGTCTGTGGCAGCCAACGACAGCA
ATAAAAATGGCTGTCAGCTTGCAGGGCCGCTCAGCCCTGCTAAGCCAAAAACTCTGGAAGCCAGTGGTGCAGTGGGCCTG
GGGTCGCAGATGATGCCAGGGCCGAAGAAGACCAAGGTAATGACTACCAAGGGCGCCATCTCTGCGACTACAGGCAAGGA
AGGAGAAGCAGGGCGGCAATGCAGGAAAAGAAGGGGGTGCAGAAAGAAAAAAAGGCAGCTGGAGGAGGGAAAGACGAGA
CTCGTCCTAGAGCCCCTAAGATCAATAACTGCATGGACTCCCTGGAAGCCATCGATCAAGAGCTGTCAAATGTAAATGCG
CAAGCTGACAGGGCCTTCCTCCAGCTGGAACGCAAATTTGGGCGGATGAGAAGGCTCCACATGCAGCGCCGAAGTTTCAT
CATCCAAAACATCCCAGGTTTCTGGGTCACAGCGTTTCGGAACCACCCGCAACTGTCACCGATGATCAGTGGCCAAGATG
AAGACATGATGAGGTACATGATCAATTTAGAGGTGGAGGAGCTTAAGCACCCAAGAGCAGGGTGGAAATTTAAGTTCATC
TTCCAAAGCAACCCCTACTTCCGAAATGAGGGGCTGGTCAAAGAGTACGAGCGCAGATCCTCAGGTCGAGTGGTGTGGCT
CTCTACGCCAATCCGCTGGCACCGGGGTCAAGAACCCCAGGCCCATATCCACAGGAATAGAGAGGGGAACACGATTCCCA
GTTTCTTCAATTGGTTCTCAGACCACAGCCTCCTAGAATTCGACAGAATAGCTGAAATTATCAAAGGGGAGCTTTGGTCC
AATCCCCTACAATACTACCTGATGGGCGATGGGCCACGCAGAGGAGTTCGAGTCCCACCAAGGCAGCCAGTGGAGAGTCC
CAGGTCCTTCAGGTTCCAGTCTGGCTAAGCTCTGCCCTCGTGAGAAGCTCTTACAGAAGAGTCCTTACCACCTTCTCAGC
TTGGCTAGCAGCATGCAGCCTTCTGTCTGCTTTCTCTTCCTTGGATTGTGTCCTTTGGTTCTTCTAAGTCTCCGGTAGTT
TCAAGGTTGTGGCTTCCAAGTCTTTGCTCTTCTTTCTCTTGGCCATCACGATGTCCTGCATAGTGTTAATGGTGTTCCAA
GTGCATGGCCTCCAAACTGCTTCTATGCCAAGCTCACGTGCTGTAGTTTGTACTGCTTTTCTTTCGTCATGGCTTGGTTCCT
GTCTGTGATCTTCTAGGTTTTTTGTTTTCTTTTTTAAAAGTGGTTCTCTATCAAAAGAAAGCTTGACATATCCTTACCAA
GAACTAGCCAGATTTCATACTGTGTTCCCGATATCTATGTACTGTGAAGAACTGTGAGTTTCGCCACTGCAAGATGGGAC
TGTATCCCAATCCAGCCATCAGCCCAACAGGACATTCCAAGCTGTCACCAACTGATCCTAGCTGTCTTCCTGGGCCTTTG
CCATTTACCCTGCTTTTTATCTATAGAATGAGCAGGTGGCTGGTAGGTGACTACTAGGTAAGAGTGAAGTATTAGGTGAG
GAGTGTTTTCTGTCACCACATTGTTCTTGTACCAATGCATCATGATCAGCTTGGATCAGCTACTGACTGTCTGATATTTC
TAACCCCCAACACAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA

FIGURE 26

Human 33b7 (106d5) DNA (coding: 88-1332)

GGGGTGGTGCTAGACGTTTCGGGCAGAGCTCGGCCGCTGCGGAGGACAAGGAACTCTCCCTCTCCCACTAGTCTGACTTC
TTCCAAAATGAGCGGCCTGGATGGGGCCAACAAGCTCCCTCTCGCCCAAACCGGCGGCCTGGCTGCTCCCGACCATGCCT
CAGGAGATCCGGACCTAGACCAGTGCCAAGGGCTCCGTGAAGAAACCGAGGCGACACAGGTGATGGCGAACACAGGTGG
GGCAGCCTGGAGACCGTTGCGGAGGGGGGTGCATCCCAGGATCCTGTCGACTGTGGCCCCGGCTCCGGCTCCCAGTTG
CGGGAGTCGCGGCGGTGCAGCGACCAAAGCCGGGCAGGAGGATGCTCCACCTTCTACGAAAGGTCTGGAAGCAGCCTCT
CCGCCGAGGCTGCTGACAGCAGCCAGAAAAATGGCTGTCAGCTTGGAGAGCCCCGTGGCCCTGCTGGGCAGAAGGCTCTA
GAAGCCTGTGGCGCAGGGGGCTTGGGGTCTCAGATGATACCGGGGAAGAAGGCCAAGGAAGTGACGACTAAAAAACGCGC
CATCTCGGCAGCAGTGGAAAAGGAGGGAGAAGCAGGGGCGGCGATGGAGGAAAAGAAGGTAGTGCAGAAGGAAAAAAAG
TGGCAGGAGGGGTGAAAGAGGAGACACGGCCCAGGGCCCCGAAGATCAATAACTGCATGGACTCACTGGAGGCCATCGAT
CAAGAGTTGTCAAACGTAAATGCCCAGGCTGACAGGGCCTTCCTTCAGCTTGAGCGCAAGTTTGGCCGCATGCGAAGGCT
CCACATGCAGCGCAGAAGTTTCATTATCCAGAATATCCCAGGTTTCTGGGTTACTGCCTTTCGAAACCACCCCCAGCTGT
CACCTATGATCAGTGGCCAAGATGAAGACATGCTGAGGTACATGATCAATTTGGAGGTGGAGGAGCTTAAACACCCCAGA
GCAGGCTGCAAATTCAAGTTCATCTTTCAGGGCAACCCCTACTTCCGAAATGAGGGGCTTGTCAAGGAATATGAACGCAG
ATCCCTCTGGCCGGGTGGTGTCTCTTCCACTCCAATCCGCTGGCACCGAGGCCAAGACCCCAGGCTCATATCCACAGAA
ACCGGGAAGGGAACACTATCCCTAGTTTCTTCAACTGGTTTTCAGACCACAGCCTTCTAGAATTCGACAGAATTGCAGAG
ATTATCAAAGGAGAACTGTGGCCCAATCCCCTACAATACTACCTGATGGGTGAAGGGCCCCGTAGAGGAATTCGAGGCC
ACCAAGGCAGCCAGTGGAGAGCGCCAGATCCTTCAGGTTCCAGTCTCGCTAATCTCTGTCCTGTGAGAAGCTTCTGCACA
AGTTTCCTTACCACCTCCTCTTGGACCTATGCTTGGCCAACAGCATGCAGTCTTCCATCTGCTTTCTCTTCATACTGTGG
ATTATCTTTTCCTTTGGTTCTAAATCTTCAGTAATCGGTTGCAAGATTGTTGGCTTACCTGCCTGTGCCATTCTTCCTC
GGGCCTTCATGCTTTTCTGCATTGTGTTAACATGTTTCAAGTGCATGGCCTTCTACGGCTTCTATGCCAAGCGTATGATA
CTATAGATATAGTGTACCATCATACTGCCTTTCTTTGCATGGCTTGGACCCTATCTGTGACCATGCTCTTCTCCCAATTTAA
TGGTTCTGTACCACAAAGAATCTTGATACATTTTCACAAATAACTGATTGGGCTTCATACTTTATGCTGGCTGTGTCCT
ATACCCATGTACTTATGGTAAGCTATTTGGGTATTACCACTGCAAGACAAAACTGATATCTTAACCCGGCCATCAACCCA
AATTGGACATTCCAGACTACCACCAACTGGATCCCAGCTGCCTTCCTGGGCTTGTGCCATCCACCCTACTGGTTATCTGA
TAGAACAAGCTGGTGGCTGATGGGTGACTGCTAGGCGTGACTGAGGTAATAGATGAAAAGTGTTCTATGTTATCACATTG
GTTTTCCTGTACCTTTGGTTACTCTACGTCATGACCAGCTGCTGGTGAGTATGAAGCCTGTGCTATAGCCCACCCCTACT
CACTCTCACCTTCTGGTTGAACTTTGCTTAGGCCACCATTGTCTGCCTCATCAGGAACTATCTGTAGACGTAGCTCCCAG
GGAGCTCACAGCAACACCCCCTACCACCAGGATGGGCAGTAATATGTGACAGAGCCCAAAGCAAGGCTGGAACGCAGTCC
CTTCCAGCTTAGTCTTCTGACTCCTAGCCAACAAACCATCCTTAATGTGAGCAACTTCTTTAGGCATTTCCTCTTTTCC
CCGCCTGCACCCACTCTGAACATGACAAAAGTTGCCAGAGTTGGGGCATTGAGGAAGAGATATTTCTGGAATGTGAGACT
TGTTATGCCTCTGTCTCTTTCTCTCCCTCCCCCTCCCTCTCCCCCTCTCCCCTCCCATCCCTTTTCTTCCCTTTCA
CTCTGAAGCAGTTTTAGCTTATTAACAGAAAACAAAACTGGCAAAGCAGGCTTTTTGTTTAATTTGCTCTTTCCCTGATT
GTGTTCAGAGAGAAAGGTTATGATTAAATGGGCTCCAGATCTCTTATTGCCCTTATTCCTCCACCCCACTTCTTTTAGCA
AGGTCTGAAAGTTCAAAGGGAGACCTATAGGTTAATTGTTTAGTTATAGGCAGTGTTAAATTAGGCAGATTTTGACATA
TTTATCTTTTTACCCCATCCATTCTACCAAAACCTGTGTATTTCTTGAGTTTTTAGTTTGAGAAGCTGGAAAGAGAGAGA
AGGGCCTCACAGTGATGGGTTCAGGACGGGTCAAAGGCAAAGGCCTTTGTGATGTGAGCAAAGGCAACCAAAACTTAGCC
TCACTCCACTTTTCTAAAGATGGAAATTCTTTTTGGGCCTTGGACTGCTTCTAGGGTAGCATTTTGTAGGTCACTCTTC
TCCTTTGTACTATTTTGTTTCTGCCCTGATGTCCCTTGGGTCTCCATCCTACTGCCTGGCTTTCTTGGCCCTCATTTCTC
AGCTTCTGCATTTCCTTCCCTGCTCCTAACAAATGAAGAAGCAGGCTGCAGCCTGCATTGTGGAAGATCTCCAGCCTCCT
TGTAGGGGATAAGGGGATGTGTAGCATCTGTGTGGATTTTCACGGACAAGTTCCAGTAGGTGGGACAGTGATGCCGTCAA
GGCTTAGTTATGATCATGTGTGGTGATAAAGACCATCCACCATCACCCTTTTTGGTTTTGAAGGCCTTGCCCTA
AGCTACCTGAGGGTTTAGGAGGTCTGAACACACACAGTGGAGAGGTTAATCTAGGTTGGGAAACTGAGTAAAAGTCCAGA
GCAGGAATGAGCCTGCTGTGGCGTGGGTTTGGAAAGGCTCACAGGAAAGAACCTGCAGGATCAGGGGTGGGAGGGGAGGC
CCCTGAGGTGCTCTCCAGGGAAGAGGGGCTGGGGTTTAAATAGCATGCTTGGAGGAAGATTTTCCTTCAATTTTTCCTAA
GTCCTTGAATTCACCAGTAGATTTTTGTAAACAAAATGTAAGTCGATGTTTTCTCTCAATTATCCTAGGAGTGACCTTTA
TATGTGTGGAAGATTAATGGTATATGCTCCTTATGTCACTGTTTTTGAGTAAAATCCATTTCCTTTCTCTGTTTCAGCCT
ATGACAAAATTGATGTTTACAGGCCTGCTTTTTGCTTATAATTGACAACATGTGCAAAAATACCAAATTTGTGTCCTGTG
CAGTATGAAGAATTCAGTGAATATTCATTAATGTATTAGCTTGTTTTGCTCTCTGTTCATATATGGCTCTATTCTTAGAA
ATATAATTTGAATGTGATCTTTCAATAGTCTGAATATTTTACAAATTATAGCTATGTCTTGTGAAAATAACCTCAAAAAG
AAAAATACGACTCTGTTGTCTTACTTGATATTTCTTGCCCTAGTAATGTACTTGACATTTATGTTCCTAAGCAGTGTAAG
TACCAGTAGAATTTCTCTGTCAAACTCAATGATCATTTAGTACTTTTGTCTTCTCCCATGTGCTTGAAGGAAAAATAAAG
TGTCACTACCGTATTTCTTGTTTTCATCAAAAAATAAAAATAATTTAAAAAACAAAAAAAAAAAAAA

Human 33b7 (106d5) protein

MSGLDGGNKLPLAQTGGLAAPDHASGDPDLDQCQGLREETEATQVMANTGGGSLETVAEGGASQDPVDCGPALRVPVAGS
RGGAATKAGQEDAPPSTKGLEAASAAEAADSSQKNGCQLGEPRGPAGQKALEACGAGGLGSQMIPGKKAKEVTTKKRAIS
AAVEKEGEAGAAMEEKKVQKEKKVAGGVKEETRPRAPKINNCMDSLEAIDQELSNVNAQADRAFLQLERKFGRMRRLHM
QRRSFIIQNIPGFWVTAFRNHPQLSPMISGQDEDMLRYMINLEVEELKHPRAGCKFKFIFQGNPYFRNEGLVKEYERRSS
GRVVSLSTPIRWHRGQDPQAHIHRNREGNTIPSFFNWFSDHSLLEFDRIAEIIKGELWPNPLQYYLMGEGPRRGIRGPPR
QPVESARSFRFQSG

FIGURE 27

Rat lp protein (partial)

LKGARPRVVNSTCSDFNHGSALHIAASNLCLGAAKCLLEHGANPALRNRKGQVPAEVVPDPMDMSLDKAEAALVAKELRT
LLEEAVPLSCTLPKVTLPNYDNVPGNLMLSALGLRLGDRVLLDGQKTGTLRFCGTTEFASGQWVGVELDEPEGKNDGSVS
GVRYFICPPKQGLFASVSKVSKAVDAPPSSVTSTPRTPRMDFSRVTGKGRREHKGKKKSPSSPSLGSLQQREGAKAEVGD
QVLVAGQNRDCAFLWEDRLCSRLLVWH

Rat lp DNA (partial, coding:1-804)

CTGAAAGGGGCGAGGCCCAGGGTGGTGAACTCCACCTGCAGTGACTTCAACCATGGCTCAGCTCTGCACATCGCTGCCTC
GAATCTGTGCCTGGGCGCCGCCAAATGTTTACTGGAGCATGGTGCCAACCCAGCGCTGAGGAATCGAAAAGGACAGGTAC
CAGCGGAAGTGGTCCCAGACCCCATGGACATGTCCCTTGACAAGGCAGAGGCAGCCCTGGTGGCCAAGGAATTGCGGACG
CTGCTAGAAGAGGCTGTGCCACTGTCCTGCACCCTTCCTAAAGTCACACTACCCAACTATGACAACGTCCCAGGCAATCT
CATGCTCAGCGGCGCTGGGCCTGCGTCTAGGAGACCGAGTGCTCCTCGATGGCCAGAAGACGGGCACGCTGAGGTTCTGCG
GGACCACCGAGTTCGCCAGTGGCCAGTGGGTGGGCGTGGAGCTAGATGAACCGGAAGGCAAGAACGACGGCAGCGTTGGG
GGTGTCCGGTACTTCATCTGCCCTCCCAAGCAGGGTCTCTTTGCATCTGTGTCCAAGGTCTCCAAGGCAGTGGATGCACC
CCCCTCATCTGTTACCTCCACGCCCCGCACTCCCCGGATGGACTTCTCCCGTGTAACGGGCAAAGGCCGGAGGGAACACA
AAGGGAAGAAGAAGTCCCCATCTTCCCCATCTCTGGGCAGCCTGCAGCAGCGTGAAGGGGCCAAAGCTGAAGTTGGAGAC
CAAGTCCTTGTGGCAGGCCAGAACAGGGATTGTGCGTTTCTATGGGAAGACAGACTTTGCTCCAGGTTACTGGTATGGCA
TTGAACTGGACCAGCCCACGGGCAAGCATGACGGCTCTGTGTTCGGTGTCCGGTACTTTACCTGTGCCCCGAGGCACGGG
GTCTTTGCACCAGCATCTCGTATCCAGAGGATTGGTGGATCCACTGATCCCCCTGGAGACAGTGTTGGAGCAAAAAAAGT
GCATCAAGTGACAATGACACAGCCCAAACGCACCTTCACAACAGTCCGGACCCCAAAGGACATTGCATCAGAGAACTCTA
TCTCCAGGTTACTCTTCTGCTGCTGGTTTCCTTGGATGCTGAGGGCGGAGATGCAGTCTTAGAGACCTGGATACCTGACA
CAGAGACAGAGTCCCCTCTAGCATCTCCTGACACAAGGAGACCCCAGTCACCCTAAGATAGAGATTCCCAGTGACACCTC
CAGAATAGAAACCCCGTTAGCCAGCCCTCGATTACTGAGGTCCCATTATTAACAGATCTCCCATGACGACTCCCCCAAAT
ACAGACCTCATGTTACCCCAAAAGAGATTCCCTGAGTAGCACCTTCAGGCTAGTCCCTGTCCCCTACCCCTCAGAGCAGA
TTTCCCCCAATAAACATTTTCCACATCACCCAAGGGATGCTGACCCTCTCCACGACAGGACGTTCTTGAGTTACCAGTGG
ATTAGAGTCCCATGAATGAAGACCCCCCCCACCCCGGTTCTCCTTAAGCATAGGTCATACCTCCAGAATAGCCAGCCACA
TCACTATCCCCATGTAACATCAGTCTCCTCAAAATGGCGTGAGGTCACTAGAAAGACCTTATACTCTCCTCTCCTTCTCA
GAGATGCCCTCCATTCACTTAAGTCCCTGTTCTCACCCCTGAACAAGACACCTAATTAACCGGCCCACTCACCTCAATTA
CAAACACCAAAATCGTCCTGGAAGCATGAATTACAGGACAGCAAGTCTTCCTGCCCTCTGCACCCTTGAGAAACCCCCAG
TGCCTTGTATGAAGCCCACCCCACATGGCCCACAGTCCCTGTGCTGGCCAAGGCTCCCAGAAAATTCTCTATTTTTTAAA
GTAATAACTTCCCCCCCTTTGGGGGGATCCCCAAATTTGGAGACCCCATTCTAGAACACTGGGGAGTTCAAATTCCAGAG
AGAATATATATTATATATAATCCCCAATTCCCCATGCTTCCAAGCCCTACAATCTCTAGAAGACCCCAAATTTCTAATTC
CCAGGACTTCCCCTACCCAAGTCACAGAATCTTCAAATCCCCAGGGAATCCCAAACTTAAGATACCAATCCCAAACCCTC
AGGAAATCCCCCAACACAAGGTCCTTAGGACCGGGAGGAAGGAACCTGTTGCCAGGAGAACATCCCAGGCTCTCAGGGCA
TCTCAAACCTGACTCCCAGGCACCAGGAGACCCCAAACAGAAAGTCCCATCTTTGGAACAAGGATAGGACTCTAATACCC
TTAGTCCATGGATCTTTAATTTCCCAACCTCCAAACTCCATGGGCCCCACCCTCAAGGGAACCCCCAAGATCCAAATCTC
TGATAACTAATATGTGCAGGGCCCAGGGCTCTAACAGGACCCCAAATCATGGAGTCCCTACTTCAATCTACCTTCTGGT
CACAGGTCCAAGACACTAAATCTGAGTCATTGGCCCCAAAGGACTTCACAGCACCTGGGCCAGACTAACAGCCTGAGGGA
GAACCTGAGGGCCCCGTGGCTCCAGAGCAGACCTGGGGCCCTGACCACCAAGGACAGCTCACGACTGCCCCTTCACTGCA
TGTCCCTAAACTCAGCATGACTCCTGTCCTCTTCAATAAAGACGTTTCTATGGCAAAAAAAAAAAAAAAAAAAAAAAAAA
AAA

FIGURE 28

Rat 7s Protein (partial)

ADSTSRWAEALREISGRLAEMPADSGYPAYLGARLASFYERAGRVKCLGNPEREGSVSIVGAVSPPGGDFSDPVTSATLG
IVQVFWGLDKKLAQRKHFPSVNWLISYSKYMRALDEYYDKHFTEFVPLRTKAKEILQEEEDLAEIVQLVGKASLAETDKI
TLEVAKLIKDDFLQQNGYTPYDRFCPFYKTVGMLSNMISFYDMARRAVETTAQSDNKITWS1IREHMGEILYKLSSMKFK
DPVKDGEAKIKADYAQLLEDMQNAFRSLED

Rat 7s DNA (partial, coding: 1-813)

GCTGACTCTACCTCTAGATGGGCTGAGGCCCTCAGAGAAATCTCTGGTCGCTTAGCTGAAATGCCTGCAGATAGTGGATA
CCCTGCATACCTTGGTGCCCGACTGGCTTCTTTCTATGAGCGAGCAGGCAGAGTGAAATGTCTTGGAAACCCTGAGAGAG
AAGGGAGTGTCAGCATTGTAGGAGCAGTTTCTCCACCTGGTGGTGATTTTCTGATCCAGTCACATCTGCTACTCTGGGT
ATTGTTCAGGTGTTCTGGGGCTTGGATAAGAAGCTAGCTCAGCGCAAGCACTTCCCGTCCGTCAACTGGCTCATTAGCTA
CAGCAAGTACATGCGCGCCCTGGACGAGTACTATGACAAACACTTCACAGAGTTCGTGCCTCTGAGGACCAAAGCTAAGG
AGATTCTGCAGGAAGAGGAGGATCTGGCGGAAATCGTGCAGCTCGTGGGAAAGGCGTCTTTAGCAGAGACAGATAAAATC
ACCCTGGAGGTAGCAAAACTTATCAAAGATGACTTCCTACAACAAAATGGGTACACTCCTTATGACAGGTTCTGTCCATT
CTATAAGACGGTGGGGATGCTGTCCAACATGATTTCATTCTATGATATGGCCCGCCGGGCTGTGGAGACCACCGCCCAGA
GTGACAATAAGATCACATGGTCCATTATCCGTGAGCACATGGGGGAGATTCTCTATAAACTTTCCTCCATGAAATTCAAG
GATCCAGTGAAGGATGGCGAGGCAAAGATCAAGGCCGACTACGCACAGCTTCTTGAAGATATGCAGAACGCATTCCGTAG
CCTGGAAGATTAGAACTGTGACTTCTCTCCTCCTCTTCCGCAGCTCATATGTGTATATTTTCCTGAATTTCTCATCTCCA
ACCCTTTGCTTCCATATTGTGCAGCTTTGAGACTAGTGCCTCGTGCGTTCTCGTTCATTTTGCTGTTTCTTTGGTAGGTC
TTATAAAACACACATTCCTGTGCTCCGCTGTCTGAAGGAGCTCCTGACCTTTGTCTGAAGTGGTGAATGTAGTGCATATG
ATACACAGTGTAACATACACATTGTAACATATACGTTCTGTAAACTTGTATGTAAGGTGACTACCCCTTCCCTCCTCTCC
AGTAAACTGTAAACAGGACTACTGCATGTGCTCTATTGGGGATGGAAGGCCAGATCTCCATACCGTGGACAGGTACATAA
GGAAACTAGACCACTTGCAACTTAGTGTTTGTTGAGTAACCATTTTGCAGGAAGTATTTCCATTTAAAAAACAAAAGATT
AATGTTCCAATTATTTGTAGCTTCCCCAGTATCAATCAGGACTGTTTGTGGCGCACTTGGGAACTATTTTGTTTTCCTAA
CAGACGTTTGCAAGGCTGAACGTAATAGATAAATCAGTTCCCTCTGAAAGTGTGAAAGTAAAAAGAGAGCTAGGTGGTCA
GACTTAAATTGACATCGTCTTGTTTAAGCATATTTTATTTCACTGAGAGATTTAATATCAAGGACTTTTATATACTCAAT
TACTAGGAAATCTTTTTTTAAGTACAATTTAAAAATCATTGAAAATGTGATCCCACATCATAGCCATTTTCCTTATATTTA
GTCAGATGAGCTCAGAGTGGGGAGGGTGTGGGTTAGAATACCACAAGGACACGCAGCAGTGCCTGCAGGCAGTGTGGCCG
GGGGCCAGAGCGGCATTGTTTTCACGAGGTACGTGTGTGGCGTGTGTGTTTGCTTGTTGACACTCTGAAAACAGCAAGCT
TACCAGTTCCAGGAAATATTTTGTTTTCTTTCACTGGCTCAGAAAGCTCCTCAAAGTACCTGGTCCCTGAAGCTTCCTAT
CTGTTAATAGAGACGAGAGAGGTTCTTAAATTTAACTGGTGACAAAACAAAAAGAAAAAAAAGATCGATTTTTGTCTTGC
TGTTTTGGTGTGTTTAAATAATAATTCCATATTTGCATAACGAGGCTCGCTTCTGAGAGCTTGGAGATCGTGCTCCCTCT
TCACTCTCCGGGGTGATAATGCTGGCGCCATGCTACCTCTTCAGGAGGGGAAGGGGATTGAACATGGCTAACACTCTCAA
GTACACAAGCGTAACGACAAAGTATTTATTTTAAGCCTTGGTATGTTGTTTAAATTATTAGGTGGTGCATTTCTTATGGT
CTTTTGGGTAGACATAGTATACACTTCAGATGTAATGTGTAAATCCTTGCTAGTGCATGTCTACACGATAGACTGCTATT
CAAGAAGGATATTCTTCCACATAACAATTTAAAAACTATTAAATCAGATATGGATTATGCAATGACTTGTTGAGAGGTGG
ATTAACGGTGCTGCTTAATCAGTTTGCTTCCAATATGGCTTCGTATCCAGAAGCCCTGACTAGTGGAGATGAGAAAGATT
TCAAAACCTGTCTGCCTACACCTACCAGCAACCTAGGCTTGTGATCAGAATGAATGATCCCAAGAAACTACTTGACCAAG
TGTGTTTTGTTGTCCTGGATTTGAGATGTGCGTTCTTCCTCCCTCTGAGACTGTTGATGTATGAGTGTGAAGAAGTTACA
GAAACAACGCTCAGATTTTCACGGTAACTTTCCCTCTGCCCACACTGTAGAGTTTCAGATTGTTCACTGATAGTGCTTCT
TTCGTAAGGATGTGTTAAAATATAGCAGTCTTTTTAAAAGATTATGCAGTTCTCTATTTATTGTGCTGTGCCTGGTCCTA
AGTGCAGCCGGTTAAACAAGTTTCATATGTATTTTTCCAGTGTTAAATCTCATACCTATGCCCTTTGGAAAGCTCCATCC
TGAACAATGAATAGAAGAGGCTATATAAATTGCCTCCTTATCCTTAAGATTTCACTATCTTTATGTTAAGAGTAATGTAT
AATTATTAAAATCTATGAAAAATAAAAAGTGGATTTAAATTAAGAGATC

FIGURE 29

Rat 29x protein

ARLPAPEHARQQPLLSGPEPGSSARVPVPGVASRRQPRGGKPPSGDGLESGPSPRPLLHARGEAGLHRQSGRVPHTGTAY
FADEPTEAQAPGGFCVSPSLLGVRWPACATRTPGSLPLSPPSAQPRTLWPTPPAGPSSRMVARNQVAADNAISPASEPRR
RPEPSSSSSSSSPAAPARPRPCPVVPAPAPGDTHFRTFRSHSDYRRITRTSALLDACGFYWGPLSVHGAHERLRAEPVGT
FLVRDSRQRNCFFALSVKMASGPTSIRVHFQAGRFHLDGSRETFDCLFELLEHYVAAPRRMLGAPLRQRRVRPLQELCRQ
RIVAAVGRENLARIPLNPVLRDYLSSFPFQI

Rat 29x DNA (Coding: 433-1071)

GCACGGCTCCCGGCCCCGGAGCATGCGCGACAGCAGCCCCTCCTCtCCGGCCCTGAGCCCGGATCGTCCGCCCGGGTTCC
AGTTCCCGGCGTGGCCAGTAGGCGGCAGCCGCGAGGCGGCAAGCCACCCAGCGGGGACGGCCTGGAGTCGGCCCCTCTC
CACGCCCCCTTCTCCACGCGCGCGGGGAGGCAGGGCTCCACCGCCAGTCTGGAAGGGTTCCACATACAGGAACGGCCTAC
TTCGCAGATGAGCCCACCGAGGCTCAGGCTCCGGGCGGATTCTGCGTGTCACCCTCGCTCCTTGGGGTCCGCTGGCCGGC
CTGTGCCACCGGACGCCCGGCTCACTGCCTCTGTCTCCCCCATCAGCGCAGCCCGGACGCTATGGCCCACCCCTCCAG
CTGCCCCCTCGAGTAGGATGGTAGCACGTAACCAGGTGGCAGCCGACAATGCGATCTCCCCGGCATCAGAGCCCCGACGG
CGGCCAGAGCCATCCTCGTCCTCGTCTTCGTCCTCGCCGGCGGCCCCGGCGCGTCCCCGGCCCTGCCCGGTGGTCCCGGC
CCCGGCTCCGGGCGACACTCACTTCCGCACCTTCCGCTCCCACTCTGATTACCGGCGCATCACGCGGACCAGCGCTCTCC
TGGACGCCTGCGGCTTCTACTGGGGACCCCTGAGCGTGCATGGGGCGCACGAACGGCTGCGTGCCGAGCCCGTGGGCACC
TTCTTGGTGCGCGACAGTCGCCAGCGGAACTGCTTCTTCGCGCTCAGCGTGAAGATGGCTTCGGGCCCCACGAGCATTCG
TGTGCACTTCCAGGCCGGCCGCTTCCACCTGGACGGCAGCCGCGAGACCTTCGACTGCCTCTTCGAGCTGCTGGAGCACT
ACGTGGCGGCGCCGCGCCGCATGTTGGGGGCCCCACTGCGCCAGCGCCGCGTGCGGCCGCTGCAGGAGCTGTGTCGCCAG
CGCATCGTGGCCGCCGTGGGTCGCGAGAACCTGGCACGCATCCCTCTTAACCCGGTACTCCGTGACTACCTGAGTTCCTT
CCCCTTCCAGATCTGACCGGCTGCCGCCGTGCCCGCAGCATTAAGTGGGAGCGCCTTATTATTTCTTATTATTAATTATT
ATTATTTTTcTGGAACCACGTGGGAGCCCTCCCCGCCTAGGTCGGAGGGAGTGGGTGTGGAGGGTGAGATGCCTCCCACT
TCTGGCTGGAGACCTTATCCCGCCTCTCGGGGGGCCTCCCCTCCTGGTGCTCCCTCCCGGTCCCCCTGGTTGTAGCAGCT
TGTGTCTGGGGCCAGGACCTGAACTCCACGCCTACCTCTCCATGTTTACATGTTCCCAGTATCTTTGCACAAACCAGGGG
TGGGGGAGGGTCTCTGGCTTCATTTTTCTGCTGTGCAGAATATTCTATTTTATATTTTTACATCCAGTTTAGATAATAAA
CTTTATTATGAAAGTTTTTTTTTTAAAGAAAAAAAAAAAAAAAAAAAAA

FIGURE 30

Rat 25r DNA (coding 130[redacted])

GGCACGGCTCCCGGCCCCGGAGCATGCGCGACAGCAGCCCCGGAACCCCCAGCCGCGGGGCCCCGCGTCCCGCCGCCAGC
GCAGCCCCGGACGCTATGGCCCACCCCTCCAGCTGGCCCCTCGAGTAGGATGGTAGCACGTAACCAGGTGGCAGCCGACA
ATGCGATCTCCCCGGCATCAGAGCCCCGACGGCGGCAGAGCCATCCTCGTCCTCGTCTTCGTCCTCGCCGGCGGCCCCG
GCGCGTCCCCGGCCCTGCCCGGTGGTCCCGGCCCCGGGCTCCGGGCGACACTCACTTCCGCACCTTCCGCTCCCACTCTGA
TTACCGGCGCATCACGCGGACCAGCGCTCTCCTGGACGCCTGCGGCTTCTACTGGGGACCCCTGAGCGTGCATGGGGCGC
ACGAACGGCTGCGTGCCGAGCCCGTGGGCACCTTCTTGGTGCGCGACAGTCGCCAGCGGAACTGCTTCTTCGCGCTCAGC
GTGAAGATGGCTTCCCCCCCCACGAGGATTCGTGTGCACTTCCAGGCCGGCGCTTCCACCTGGACGGCAGCCGCGAGAC
CTTCGACTGCCTCTTCGAGCTGCTGGAGCACTACGTGGCGGCGCCGCGCCGCATGTTGGGGGCCCCACTGCGCCAGCGCC
GCGTGCGGCCGCTGCAGGAGCTGTGTCGCCAGCGCATCGTGGCCGCCGTGGGTCGCGAGAACCTGGCACGCATCCCTCTT
AACCCGGTACTCCGTGACTACCTGAGTTCCTTCCCCTTCCAGATCTGACCGGCTGCCGCCGTGCCCGCAGCATTAAGTGG
GAGCGGCTTATTATTTCTTATTATTAATTATTATTATTTTTCTGGAACCACGTGGGAGCCCTCCCCGCCTAGGTCGGAGG
GAGTGGGTGTGGAGGGTGAGATGCCTCCCACTTCTGGCTGGAGACCTTATCCCGCCTCTCGGGGGGCCTCCCCTCCTGGT
GCTCCCTCCCGGTCCCCCTGGTTGTAGCAGCTTGTGTCTGGGGCCAGGACCTGAACTCCACGCCTACCTCTCCATGTTTA
CATGTTCCCAGTATCTTTGCACAAACCAGGGGTGGGGGAGGGTCTCTGGCTTCATTTTTCTGCTGTGCAGAATATTCTAT
TTTATATTTTTACATCCAGTTTAGATAATAAACTTTATTATGAAAGTTTTTTTTTTAAAAAAAAAAAAAAAAAA

FIGURE 31

Rat 5p protein

MPSQMEHAMETMMLTFHRFAGERNTIVKEDLRVLMEREFPGFLENQKDPLAVDKIMKDLDQDGKVGFQSFLSLVAGLI
IACNDYFVVHMKQKK

Rat 5p DNA (coding: 52-339)

CTTCCAAAGACTGCAGCGCCTCAGGGCCCAGGTTTCAACAGATTCTTCAAAATGCCATCCCAAATGGAGCATGCCATGGA
AACCATGATGCTTACATTTCACAGGTTTGCAGGGGAAAAAAACTACTTGACAAAGGAGGACCTGAGAGTGCTCATGGAAA
CCCAGTTCCCTCCCTTTTTCCAAATCAAAAGCAGCCTCTCCCTCTCCCACAAAATAATCAAACACCTCCACCACTCCCA
GATGGAAAAGTGGGCTTCCAGAGCTTTCTATCACTAGTGGCGGGGCTCATCATTGCATGCAATGACTATTTTGTAGTACA
CATGAAGCAGAAGAAGTAGGCCAACTGGAGCCCTGGTACCCACACCTTGATGCGTCCTCTCCCATGGGGTCAACTGAGGA
ATCTGCCCCACTGCTTCCTGTGAGCAGATCAGGACCCTTAGGAAATGTGCAAATAACATCCAACTCCAATTCGACAAGCA
GAGAAAGAAAAGTTAATCCAATGACAGAGGAGCTTTCGAGTTTTATATTGTTTGCATCCGGTTGCCCTCAATAAAGAAAG
TCTTTTTTTTTAAGTTCCGAAAAAAAAAAAAAAAAAAAAA

FIGURE 32

Rat 7q protein

MAYAYLFKYIIIGDTGVGKSCLLLQFTDKRFQPVHDLTIGVEFGARMITIDGKQIKLQIWDTAGQESFRSITRSYYRGAA
GALLVYDITRRDTFNHLTTWLEDARQHSNSNMVIMLIGNKSDLESRREVKKEEGEAFAREHGLIFMETSAKTASNVEEAF
INTAKEIYERIQEGVFDINNEANGIKIGPQHAATNASHGGNQGGQQAGGGCC

Rat 7q DNA (coding 1-639)

ATGGCGTACGCCTATCTCTTCAAGTACATCATCATCGGCGACACAGGTGTTGGTAAATCGTGCTTATTGCTACAGTTTAC
AGACAAGAGGTTTCAGCCGGTGCATGACCTCACAATTGGTGTAGAGTTTGGTGCTCGAATGATAACCATTGATGGGAAAC
AGATAAAACTCCAGATCTGGGATACAGCAGGGCAGGAGTCCTTTCGTTCTATCACAAGGTCATATTACAGAGGTGCAGCG
GGGGCTTTACTAGTGTATGATATTACAAGGAGAGACACGTTCAACCACTTGACAACCTGGTTAGAAGACGCCCGTCAGCA
TTCCAATTCCAACATGGTCATCATGCTTATTGGAAATAAAAGTGACTTAGAATCTAGGAGAGAAGTGAAAAAGGAAGAAG
GTGAAGCTTTTGCACGAGAGCATGGACTTATCTTCATGGAAACTTCTGCCAAGACTGCTTCTAATGTAGAGGAGGCATTT
ATTAACACAGCAAAAGAAATTTATGAAAAAATCCAAGAAGGGGTCTTTGACATTAATAATGAGGCAAACGGCATCAAAAT
TGGCCCTCAGCATGCTGCTACCAATGCATCTCACGGAGGCAACCAAGGAGGGCAGCAGGCAGGGGGAGGCTGCTGCTGA

FIGURE 33

Rat 19r protein

MVLLKEYRVILFVSVDEYQVGQLYSVAEASKNETGGGEGVEVLVNEPYEKDDGEKGQYTHKIYHLQSKVPTFVRMLAPEG
ALNIHEKAWNAYFYCRTVITNEYMKEDFLIKIETWHKPDLGTQENVHKLEPEAWKHVEAIYIDIADRSQVLSKEYKAEEI
PAKFKSIKTGRGPLGPNWKQELVNQKDCPYMCAYKLVTVKFKWWGLQNKVENFIHKQEKRLFTNFHRQLFCWLDKWVDLT
MDDIRRMEEETKRQLDEMRQKDPVKGMTADD

Rat 19r DNA (coding 1-816)

ATGGTGCTGCTCAAGGAATATCGGGTCATCCTGCCTGTGTCTGTAGATGAGTATCAAGTGGGGCAGCTGTACTCTGTGGC
TGAAGCCAGTAAAAATGAAACTGGTGGTGGGGAAGGTGTGGAGGTCCTGGTGAACGAGCCCTACGAGAAGGATGATGGCG
AGAAAGGCCAGTACACACACAAGATCTACCACTTACAGAGCAAAGTTCCCACGTTTGTTCGAATGCTGGCCCCAGAAGGC
GCCCTGAATATACATGAGAAAGCCTGGAATGCCTACCCTTACTGCAGAACCGTTATTACAAATGAGTACATGAAGGAAGA
CTTTCTCATTAAAATTGAAACCTGGCACAAGCCAGACCTTGGCACCCAGGAGAATGTGCATAAACTGGAGCCTGAGGCAT
GGAAACATGTGGAAGCTATATATATAGACATCGCTGATCGAAGCCAAGTACTTAGCAAGGATTACAAGGCAGAGGAAGAC
CCAGCAAAATTTAAATCTATCAAAACAGGACGAGGACCATTGGGCCCGAATTGGAAGCAAGAACTTGTCAATCAGAAGGA
CTGCCCATATATGTGTGCATACAAACTGGTTACTGTCAAGTTCAAGTGGTGGGGCTTGCAGAACAAAGTGGAAAACTTTA
TACATAAGCAAGAGAAGCGTCTGTTTACAAACTTTCACAGGCAGCTGTTCTGTTGGCTTGATAAATGGGTTGATCTGACT
ATGGATGACATTCGGAGGATGGAAGAAGAGACGAAGAGACAGCTGGATGAGATGAGACAAAAGGACCCCGTGAAAGGAAT
GACAGCAGATGACTAG

FIGURE 34

Monkey KChIP4c (jlkxa053c02) DNA sequence (CDs: 122-811)

CGCTCTCCTCCTCCCCTTTCTCTAGTAGTAGCCTTCTTAATGTAGTTTAATGCTTTACAAAGAAAGCCAGGCAGAGGA
CACTTCTCAGTGGCTGTGGTCGGACCATGACCTAGCTGACCATGAACTTGGAAGGGCTTGAAATGATAGCAGTTCTGAT
GTCATTGTGCTTTTTGTTAAATTATTGGGACAGTTTGGGCTGATTGAAGGAGTTTAGAAGACGCCTGGAAAACAACT
GGAGATGGCCACTGTCAGGCATCGGCCTGAGGCCCTTGAGCTTCTGGAAGCCCAGAGCAAATTTACCAAGAAAGAGCTTC
AGATCCTTTACAGAGGATTTAAGAACGAATGCCCAGTGGTGTTGTTAATGAAGAAACCTTCAAAGAGATTTACTCGCAG
TTCTTTCCACAGGGAGACTCTACAACATATGCACATTTTCTGTTCAATGCGTTTGATACGGACCACAATGGAGCTGTGAG
TTTCGAGGATTTCATCAAAGGTCTTTCCATTTTGCTCCGGGGGACAGTACAAGAAAAACTCAATTGGGCATTTAATCTGT
ATGATATAAATAAAGATGGCTACATCACTAAAGAGGAAATGCTTGATATAATGAAAGCAATATACGACATGATGGGTAAA
TGTACATATCCTGTCCTCAAAGAAGATGCACCCAGACAACACGTCGAAACATTTTTTCAGAAAATGGACAAAAATAAAGA
TGGGGTTGTTACCATAGATGAGTTCATTGAAAGCTGCCAAAAAGATGAAAACATAATGCGCTCCATGCAGCTCTTTGAAA
ATGTGATTTAACTTGTCAACTAGATCCTGAATCCAACAGACAAATGTGAACTATTCTACCACCCTTAAAGTCGGAGCTAC
CACTTTTAGCATAGATTGCTCAGCTTGACACTGAAGCATATTATGCAAACAAGCTTTGTTTTAATATAAAGCAATCCCCA
AAAGATTTGAGTTTCTCAGTTATAAATTTGCATCCTTTCCATAATGCCACTGAGTTCATGGGATGTTCTAACTCATTTCA
TACTCTGTGAATATTCAAAAGTAATAGAATCTGGCATATAGTTTTATTGATTCCTTAGCCATGGGATTATTGAGGCTTTC
ACATATCAGTGATTTTAAAATACCAGTGTTTTTTGCTACTCATTTGTATGTATTCAGTCCTAGGATTTTGAATGGTTTTC
TAATATACTGACATCTGCATTTAATTTCCAGAAATTAAATTAATTTTCATGTCTGAATGCTGTAATTCCATTTATATACT
TTAAGTAAACAAATAAGATTACTACAATTAAACACATAGTTCCAGTTTCTATGGCCTTCACTTCCCACCTTCTATTAGAA
ATTAATTTTATCTGGTATTTTTAAACATTTAAAAATTTATCATCAGATATCAGCATATGCCTAATTATGCCTAATGAAAC
TTAATAAGCATTTAATTTCCATCATACATTATAGTCAAGGCTATATACTATATATAATTTTGGATTTGTTTAATCTTA
CAGGCTGTTTTCCATTGTATCATCAAGTGGAAGTTCAAGACGGCATCAAACAAAACAAGGATGTTTACAGACATATGCAA
AGGGTCAGGATATCTATCCTCCAGTATATGTTAATGCTTAATAACAAGTAATCCTAACAGCATTAAAGGCCAAATCTGTC
CTCTTTCCCCTGACTTCCTTACAGCATGTTTATATTACAAGCCATTCAGGGACAAAGAAACCTTGACTACCCCACTGTCT
ACTAGGAACAAACAAACAGCAAGCAAAATTCACTTTGAAAGCACCAGTGGTTCCATTACATTGACAACTACTACCAAGAT
TCAGTAGAAAATAAGTGCTCAACAACTAATCCAGATTACAATATGATTTAGTGCATCATAAATTCCAACAATTCAGATT
ATTTTTAATCACCTCAGCCACAACTGTAAAGTTGCCACATTACTAAAGACACACACATCGTCCCTGTTTTGTAGAAATAT
CACAAAGACCAAGAGGCTACAGAAGGAGGAAATTTGCAACTGTTTTGCAACAATAAATCAGGTATCTATTCTGGTGTAG
AGATAGGATGTTGAAAGCTGCCCTGCTATCACCAGTGTAGAAATTAAGAGTAGTACAATACATGTACACTGAAATTTGCC
ATCGCGTGTTTGTGTAAACTCAATGTGCACATTTTGTATTTCAAAAAGAAAAAATAAAAGCAAAATAAAATGTTTATAAC
TCTAAAAAAAAAAAAAAAAAAAA

Monkey KChIP4c protein sequence

MNLEGLEMIAVLIVIVLFVKLLEQFGLIEAGLEDSVEDELEMATVRHRPEALELLEAQSKFTKKELQILYRGFKNECPSG
VVNEETFKEIYSQFFPQGDSTTYAHFLFNAFDTDHNGAVSFEDFIKGLSILLRGTVQEKLNWAFNLYDINKDGYITKEEM
LDIMKAIYDMMGKCTYPVLKEDAPRQHVETFFQKMDKNKDGVVTIDEFIESCQKDENIMRSMQLFENVI.

FIGURE 35

Monkey KChIP4d (1kx015b10) DNA sequence (2654 nts)

GTCGACAGACGCCCTGGCGGTGGACTCCTGAGTCTTACTCCTGCACCTCGCGTCCCCAGACATGAATGTGAGGAGAGT
GGAAAGCATTTCGGCTCAGCTGGAGGAGGCCAGCTCCACAAGCGGTTTCTCTATGCTCAGAACAGCACAAGCCAGTA
TTAAAGAGCGGCTCATGAAGCTCTTGCCCTGCTCAGCTGCAAAACATCGTCTCCTGCTATTCAAAACAGCGTGGAAGAT
GAACTGGAGATTAGCCACTGTCAGGCATCGGCCTGAGGCCTTGAGTTTCTGAAGCGCAAGTTAACCATCAACAA
GCTTCAGATCCTTTACAGAGGATTTAAGAACGAATGCCCCAGTGGTGTTGTTAATCAAGAAACCTTCAAAGAGATTTACT
CGCAGTTCTTTCCACAGGGAGACTCTACAACATATGCACATTTTCTGTTCAATGCGTTTGATACGGACCACAATGGAGCT
GTGAGTTTCGAGGATTTCATCAAAGGTCTTTCCATTTTGCTCCGGGGGACAGTACAAGAAAACTCAATTGGCCATTTAA
TCTGTATGATATAAATAAAGATGGCTACATCACTAAAGAGGAATATGTTGATATAATGAAGCAATATACGACATGATGT
GTAAATGTACATATCCTGTCCTCAAAGAAGATGCACCCAGACAACAACGTCGAAACATTTTTTCAGAAAATGGACAAAAAT
AAAGATGGGGTTGTTACCATAGATCAGTTCATTGAAAGCTGCCAAAAAGATGAAAACATAATGCGCTCCATGCAGCTCTT
TGAAAATGTGATTTAACTTGTCAACTAGATCCTGAATCCAACAGACAAATGTGAACTATTCTACCACCCTTAAAGTCGGA
GCTACCACTTTTAGCATAGATTGCTCAGCTTGACACTGAAGCATATTATGCAAACAAGCTTTGTTTTAATATAAAGCAAT
CCCCAAAAGATTTGAGTTTCTCAGTTATAAATTTGCATCCTTTCCATAATGCCACTGAGTTCATGGGATGTTCTGACTCA
TTTCATACTCTGTGAATATTCAAAAGTAATAGAATCTGGCATATAGTTTTATTGATTCCTTAGCCATGGGATTATTGAGG
CTTTCACATATCAGTGATTTTAAAATACCAGTGTTTTTTGCTACTCATTTGTATGTATTCAGTCCTAGGATTTTGAATGG
TTTTCTAATATACTGACATCTGCATTTAATTTCCAGAAATTAAATTAATTTTCATGTCTGAATGCTGTAATTCCATTTAT
ATACTTTAAGTAAACAAATAAGATTACTACAATTAAACACATAGTTCCAGTTTCTATGGCCTTCACTTCCCACCTTCTAT
TAGAAATTAATTTTATCTGGTATTTTTAAACATTTAAAAATTTATCATCAGATATCAGCATATGCCTAATTATGCCTAAT
GAAACTTAATAAGCATTTAATTTTCCATCATACATTATAGTCAAGGCTATATACTATATATAATTTTGGATTTGTTTAA
TCTTACAGGCTGTTTTCCATTGTATCATCAAGTGGAAGTTCAAGAGGCATCAAACAAAACAAGGATGTTTACAGACATA
TGCAAAGGGTCAGGATATCTATCCTCCAGTATATGTTAATGCTTAATAACAAGTAATCCTAACAGCATTAAAGGCCAAAT
CTGTCCTCTTTCCCCTGACTTCCTTACAGCATGTTTATATTACAAGCCATTCAGGGACAAAGAAACCTTGACTAGCCAC
TGTCTACTAGGAACAAACAAACAGCAAGCAAAATTCACTTTGAAAGCACCAGTGGTTCCATTACATTGACAACTACTACC
AAGATTCAGTAGAAAATAAGTGCTCAACAACTAATCCAGATTACAATATGATTTAGTGCATCATAAAATTCCAACAATTC
AGATTATTTTTAATCACCTCAGCCACAACTGTAAAGTTGCCACATTACTAAAGACACACATCGTCCTCTTTTGTAGA
AATATCACAAAGACCAAGAGGCTACAGAAGGAGGAAATTTGCAACTGCTTTGCAACAATAAATCAGGTATCTATTCTGG
TGTAGAGATAGGATGTTGAAAGCTGCCCTGCTATCACCAGTGTAGAAATTAAGAGTAGTACAATACATGTACACTGAAAT
TTGCCATCGCGTGTTTGTGTAAACTCAATGTGCACATTTTGTATTTCAAAAAGAAAAAATAAAAGCAAAATAAAATGTTA
AAAAAAAAAAAAAAAAAAA

Monkey KChIP4d protein sequence

MNVRRVESISAQLEEASSTGGFLYAQNSTKRSIKERLMKLLPCSAAKTSSPAIQNSVEDELEMATVRHRPEALELLEAQS
KFTKKELQILYRGFKNECPSGVVNEETFKEIYSQFFPQGDSTTYAHFLFNAFDTDHNGAVSFEDFIKGLSILLRGTVQEK
LNWAFNLYDINKDGYITKEEMLDIMKAIYDMMGKCTYPVLKEDAPRQHVETFFQKMDKNKDGVVTIDEFIESCQKDENIM
RSMQLFENVI.

FIGURE 36

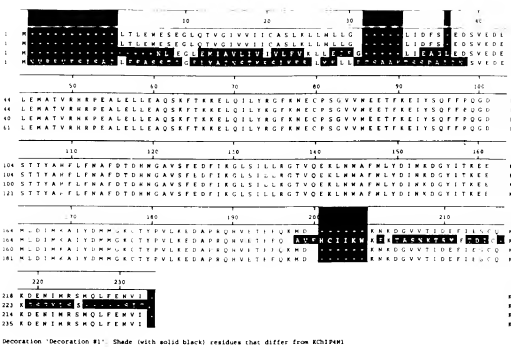
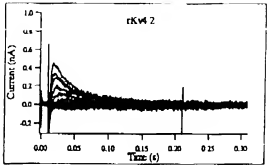
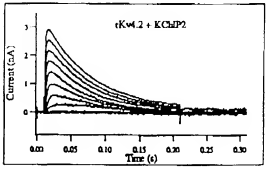


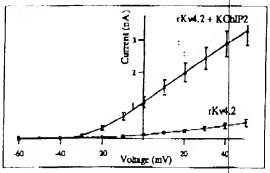
FIGURE 37

KChIP2 Expression Alters Kv4.2 Current





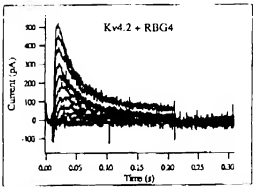
Voltage-Dependence

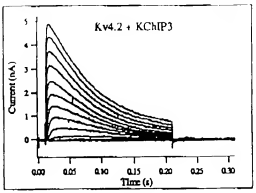


Current Parameter	CHO	
	rKv4.2	rKv4.2 +KChIP2
Peak Current (nA/cell, at 50 mV)	0.51 ± 0.098	3.3 ± 0.45
Peak Current Density (pA/pF, at 50 mV)	18.6 ± 2.8	196.6 ± 26.6
Inactivation time constant (ms, at 50 mV)	28.47 ± 3.5	95.14 ± 8.3
Recovery from Inactivation time constant (ms, at -80 mV)	257.9	49.5
Activation $V_{1/2}$ (mV)	20.5	-2.2
Steady-state Inactivation $V_{1/2}$ (mV)	-47.1	-45.7

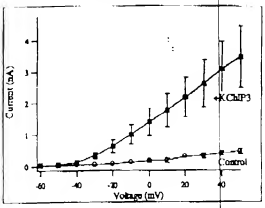
FIGURE 38

KChIP3 Expression Alters Kv4.2 Current





Voltage Dependence



Current Parameter	CHO	
	rKv4.2 +RBG4	rKv4.2 +KChIP3
Peak Current (nA/cell, at 50 mV)	**0.46** ± 0.084	**3.5** ± 0.99
Peak Current Density (pA/pF, at 50 mV)	**29.7** ± 11.2	**161.7** ± 21.8
Inactivation time constant (ms, at 50 mV)	**29.5** ± 9.5	**67.2** ± 14.1
Recovery from Inactivation time constant (ms, at -80 mV)	**435.9**	**130.8**
Activation $V_{1/2}$ (mV)	**4.1**	**6.1**

FIGURE 39

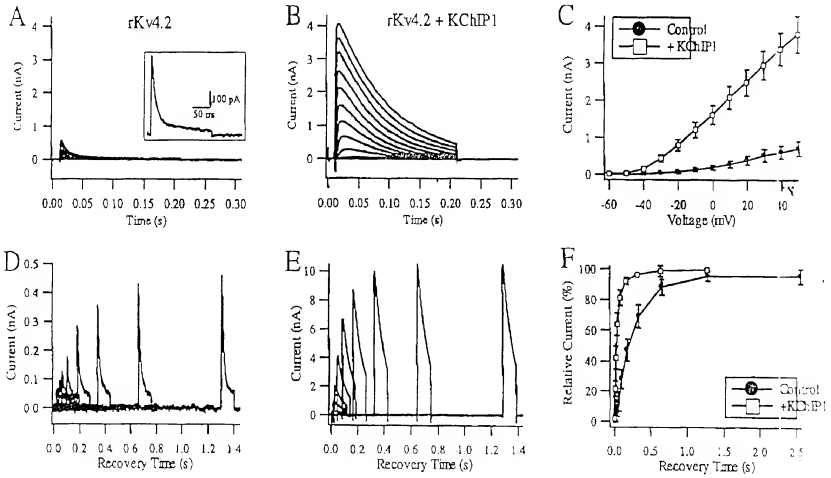

A
rKv4.2
Current (nA)
100 pA
50 ms
Time (s)
B
rKv4.2 + KChIP1
Current (nA)
Time (s)
C
Control
+KChIP1
Current (nA)
Voltage (mV)
D
Current (nA)
Recovery Time (s)
E
Current (nA)
Recovery Time (s)
F
Relative Current (%)
Control
+KChIP1
Recovery Time (s)

Figure 4D

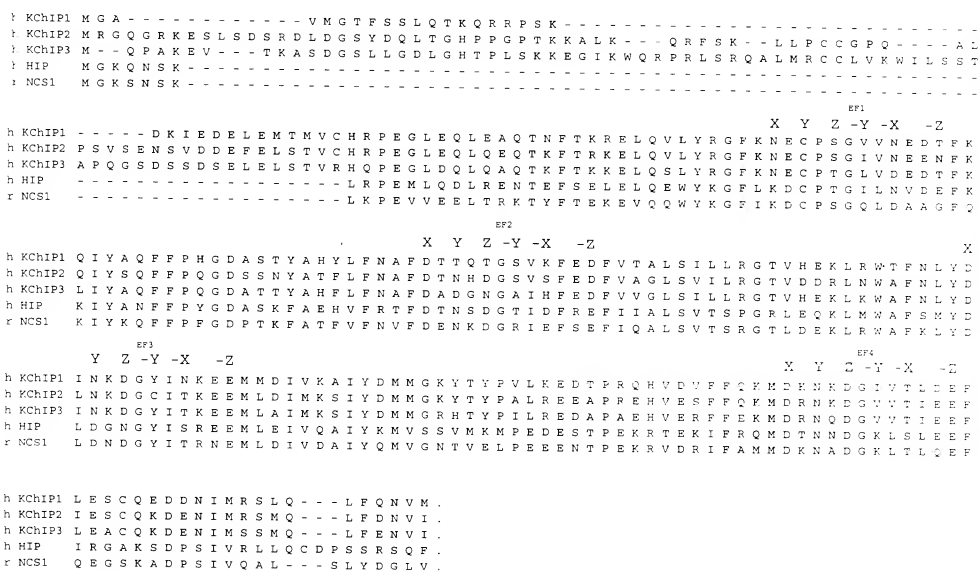

h KChIP1 MGA-------------VMGTFSSLQTKQRRPSK----------
h KChIP2 MRGQGRKESLSDSRDLDGSYDQLTGHPPGPTKKALK---QRFSK--LLPCCGPQ----AL
h KChIP3 M--QPAKEV---TKASDGSLLGDLGHTPLSKKEGIKWQRPRLSRQALMRCCLVKWILSST
h HIP MGKQNSK----------
r NCS1 MGKSNSK----------
EF1
X Y Z -Y -X -Z
h KChIP1 -----DKIEDELEMTMVCHRPEGLEQLEAQTNFTKRELQVLYRGFKNECPSGVVNEDTFK
h KChIP2 PSVSENSVDDEFELSTVCHRPEGLEQLQEQTKFTRKELQVLYRGFKNECPSGIVNEENFK
h KChIP3 APQGSDSSDSELELSTVRHQPEGLDQLQAQTKFTKKELQSLYRGFKNECPTGLVDEDTFK
h HIP ----------LRPEMLQDLRENTEFSELELQEWYKGFLKDCPTGILNVDEFK
r NCS1 ----------LKPEVVEELTRKTYFTEKEVQQWYKGFIKDCPSGQLDAAGFQ
EF2
X Y Z -Y -X -Z
X
h KChIP1 QIYAQFFPHGDASTYAHYLFNAFDTTQTGSVKFEDFVTALSILLRGTVHEKLRWTFNLYD
h KChIP2 QIYSQFFPQGDSSNYATFLFNAFDTNHDGSVSFEDFVAGLSVILRGTVDDRLNWAFNLYD
h KChIP3 LIYAQFFPQGDATTYAHFLFNAFDADGNGAIHFEDFVVGLSILLRGTVHEKLKWAFNLYD
h HIP KIYANFFPYGDASKFAEHVFRTFDTNSDGTIDFREFIIALSVTSPGRLEQKLMWAFSMYD
r NCS1 KIYKQFFPFGDPTKFATFVFNVFDENKDGRIEFSEFIQALSVTSRGTLDEKLRWAFKLYD
EF3
Y Z -Y -X -Z
EF4
X Y Z -Y -X -Z
h KChIP1 INKDGYINKEEMMDIVKAIYDMMGKYTYPVLKEDTPRQHVDVFFQKMDRNKDGIVTLDEF
h KChIP2 LNKDGCITKEEMLDIMKSIYDMMGKYTYPALREEAPREHVESFFQKMDRNKDGVVTIEEF
h KChIP3 INKDGYITKEEMLAIMKSIYDMMGRHTYPILREDAPAEHVERFFEKMDRNQDGVVTIEEF
h HIP LDGNGYISREEMLEIVQAIYKMVSSVMKMPEDESTPEKRTEKIFRQMDTNNDGKLSLEEF
r NCS1 LDNDGYITRNEMLDIVDAIYQMVGNTVELPEEENTPEKRVDRIFAMMDKNADGKLTLQEF
h KChIP1 LESCQEDDNIMRSLQ---LFQNVM.
h KChIP2 IESCQKDENIMRSMQ---LFDNVI.
h KChIP3 LEACQKDENIMSSMQ---LFENVI.
h HIP IRGAKSDPSIVRLLQCDPSSRSQF.
r NCS1 QEGSKADPSIVQAL---SLYDGLV.

FIGURE 41